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CORRECTIVE ACTION STABILIZATION QUESTIONNAIRE

Completed by: Mary Wojciechowski
Date: August 31, 1992

FILED
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RIN # 203-10
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Background Facility Information

Facility Name: LTV Steel Company
EPA Identification No.: ILD 000 781 591
Location (City, State): Hennepin, Illinois
Facility Priority Rank: High

1. Is this checklist being completed for one solid waste management unit (SWMU), several SWMUs, or the entire facility? Explain.

Entire facility
53 SWMUs
7 AOCs

Status of Corrective Action Activities at the Facility

2. What is the current status of HSWA corrective action activities at the facility?
- ☐ No corrective action activities initiated (Go to 5)
☒ RCRA Facility Assessment (RFA) or equivalent completed
☐ RCRA Facility Investigation (RFI) underway
☐ RFI completed
☐ Corrective Measures Study (CMS) completed
☐ Corrective Measures Implementation (CMI) begun or completed
☐ Interim Measures begun or completed

3. If corrective action activities have been initiated, are they being carried out under a permit or an enforcement order?

☐ Operating permit
☐ Post-closure permit
☐ Enforcement order
☐ Other (Explain)

There is no record of past corrective action.

4. Have interim measures, if required or completed [see Question 2], been successful in preventing the further spread of contamination at the facility?

☐ Yes
☐ No
☐ Uncertain; still underway
☒ Not required

Additional explanatory notes:

Interim measures have not been required.

Facility Releases and Exposure Concerns

5. To what media have contaminant releases from the facility occurred or been suspected of occurring?

☒ Ground water
☐ Surface water
☐ Air
☒ Soils

6. Are contaminant releases migrating off-site?

☐ Yes; Indicate media, contaminant concentrations, and level of certainty.

Groundwater:

Surface water:

Air:

Soils:

☐ No
☒ Uncertain

- 7a. Are humans currently being exposed to contaminants released from the facility?

☐ Yes (Go to 8a)
☐ No
☒ Uncertain

Additional explanatory notes:

Past waste management practices indicate contamination is likely. However, further sampling is needed to confirm the existence of contamination at the facility.

- 7b. Is there a potential for human exposure to the contaminants released from the facility over the next 5 to 10 years?

☐ Yes
☐ No
☒ Uncertain

Additional explanatory notes:

Past waste management practices indicate contamination is likely. However, further sampling is needed to confirm the existence of contamination at the facility.

- 8a. Are environmental receptors currently being exposed to contaminants released from the facility?

☐ Yes (Go to 9)
☐ No
☒ Uncertain

Additional explanatory notes:

Paste waste management practices indicate contamination is likely. However, further sampling is needed to confirm the existence of contamination at the facility.

- 8b. Is there a potential that environmental receptors could be exposed to the contaminants released from the facility over the next 5 to 10 years?

☐ Yes
☐ No
☒ Uncertain

Additional explanatory notes:

Paste waste management practices indicate contamination is likely. However, further sampling is needed to confirm the existence of contamination at the facility.

Anticipated Final Corrective Measures

9. If already identified or planned, would final corrective measures be able to be implemented in time to adequately address any existing or short-term threat to human health and the environment?

☐ Yes
☐ No
☒ Uncertain

Additional explanatory notes:

Further sampling is needed to confirm the existence of contamination at the facility.

10. Could a stabilization initiative at this facility reduce the present or near-term (e.g., less than two years) risks to human health and the environment?

☐ Yes
☐ No
☒ Uncertain

Additional explanatory notes:

Further sampling is needed to confirm the existence of contamination at the facility.

11. If a stabilization activity were not begun, would the threat to human health and the environment significantly increase before final corrective measures could be implemented?

☐ Yes
☐ No
☒ Uncertain

Additional explanatory notes:

Further sampling is needed to confirm the existence of contamination at the facility.

Technical Ability to Implement Stabilization Activities

12. In what phase does the contaminant exist under ambient site conditions? Check all that apply.

☒ Solid
☒ Light non-aqueous phase liquids (LNAPLs)
☐ Dense non-aqueous phase liquids (DNAPLs)
☒ Dissolved in ground water or surface water
☐ Gaseous
☐ Other _____

13. Which of the following major chemical groupings are of concern at the facility?

☐ Volatile organic compounds (VOCs) and/or semi-volatiles
☐ Polynuclear aromatics (PAHs)
☐ Pesticides
☐ Polychlorinated biphenyls (PCBs) and/or dioxins
☐ Other organics
☒ Inorganics and metals
☐ Explosives
☐ Other _____

14. Are appropriate stabilization technologies available to prevent the further spread of contamination, based on contaminant characteristics and the facility's environmental setting? [See Attachment A for a listing of potential stabilization technologies.]

☐ Yes; Indicate possible course of action.

☒ No; Indicate why stabilization technologies are not appropriate; then go to Question 18.

Further sampling is needed to confirm the existence of contamination at the facility.

15. Has the RFI, or another environmental investigation, provided the site characterization and waste release data needed to design and implement a stabilization activity?

☐ Yes

☐ No

If No, can these data be obtained faster than the data needed to implement the final corrective measures?

☐ Yes

☐ No

Timing and Other Procedural Issues Associated with Stabilization

16. Can stabilization activities be implemented more quickly than the final corrective measures?

☐ Yes

☐ No

☐ Uncertain

Additional explanatory notes:

17. Can stabilization activities be incorporated into the final corrective measures at some point in the future?

☐ Yes

☐ No

☐ Uncertain

Additional explanatory notes:

Conclusion

18. Is this facility an appropriate candidate for stabilization activities?

- () Yes
() No, not feasible
() No, not required
(X) Further investigation necessary

Explain final decision, using additional sheets if necessary.

Soil and ground-water contamination is suspected at this facility due to the operation of numerous land disposal units (such as trenches and lagoons), USTs, and unlined storage areas.

A 1989 visual site inspection revealed stains in many areas, but sampling needs to be conducted to verify the existence of and determine the nature and extent of contamination.

[illegible]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

Date: 5/16/90

Subject: LTV Steel Company, Hennepin, IL., Site Visit
ILD 000 781 591

From: Robert A. Fuhrer, RPB-IL



To: IEPA & LTV File

On December 7, 1989 the U.S. EPA recieved the final Preliminary Review/Visual Site Inspection (PR/VSI) report from A.T. Kearney as part of LTV's RCRA Facility Assesment (RFA). This report included a VSI at the LTV facility by A.T. Kearney on August 9 and 10, 1989.


On May 9, 1990, Gale Hruska and Robert Fuhrer of the U.S. EPA toured the LTV Hennepin site with Roy Newell and John Shinkus of LTV. Paul Schlingman was originally supposed to give us the tour, but he was not available. The site visit conducted by the U.S. EPA was to assess if sampling was an appropriate next step of the RFA and/or to define which areas would be appropriate to sample for possible releases of hazardous waste or constituents leading to corrective actions, if needed.

The day was overcast, 63 degrees, and it was constantly drizzling all afternoon. The plant was not running at full production because Illinois Power curtailed LTV's energy use.

LTV told us that their drinking water comes from the city supply (groundwater) while LTV's process water comes from the Illinois River. The water table in the plant area averages around 2-6 feet below the surface, but during wet seasons can be at the surface.

We first saw the Old Sludge Lagoon (46) near the Illinois River. This lagoon has a plastic liner and ceased operations in 1974. Rain water that accumulates in this lagoon is released to the river. Directly north of 46 were little mounds that were the Old Sludge Drying Beds (47). This area is no longer used because sludge is sent to the treatment plant. We did not see the active Effluent Lagoon (45) (that discharges to the Illinois River under a NPDES Permit) because it was inaccessible due to the weather. Sometimes the sludge is removed from the Effluent Lagoon and sent through LTV's treatment plant where the end material is the filter cake that is sent off site.

The next stop was the Industrial Waste Treatment Plant. We saw the Waste Oil Tank (32) which displayed discoloration on the tank and on the gravel surrounding the tank. Directly north of 32 was the "Old" Incinerator Area (33). This area was just a small concrete pad that probably held a small incinerator. Nearby were the Waste Pickle Liquor Tanks (40 & 41). These tanks appeared to be adequately maintained. We then drove by the UIC (injection) Well (43). This well takes hydrochloric acid and a small quantity



(by volume) of chromium waste acid. LTV is applying for a waiver from the Land Ban Regulations so they can continue to dispose of their wastes in their injection well. This UIC well gives RCRA the authority to sample or require sampling in permit conditions, contrary to what LTV believes.

We then went past SWMU 44, which is the Waste Pickle Loading Area and then to the Waste Pickle Liquor Sump that is just outside the building, in a 35 foot deep vault with a large, rubber coated, steel tank. We then looked around the Deep Well Injection System (42), the Sludge Filter System (34), and just outside the building the Sludge Bin (35) and the Sludge Roll-off Box (36). The A. T. Kearney PR/VSI labled 22, 23, 37 and 38 as SWMUs. These SWMUs may be better classified as areas of concern (AOC) at this site, and only would need corrective actions if a hazardous waste (or constituents) were shown to be released from these units. Units 22 and 23 are River Water Clarifiers, where the water comes from the Illinois River, and is used for the plant process water. Units 37 and 38, the Sludge Dump Trucks and Sludge Front End Loader respectively, are not truly SWMUs. Units 24-31 are the treatment units and maybe should have been labled as one unit.

After the Industrial Waste Treatment Plant we drove around the main plant, past the Product Drum Storage Area (7), Bulk Oil Sump (6) the Electric Transformer Area (c), and the Steel Coil Roll Yard (5) to see what were called the Railroad Container Storage Areas (3 & 4). Area 4 appeared empty while Unit 3 had 3, 55 gallon drums that appeared empty and several, white 5 gallon containers that also appeared empty. These areas did not appear to be hazardous waste storage areas. We then saw the Wood and Packaging Wastes Trench (1) and the Metal Waste Trench (2). LTV said that Unit 1 is still active and accepts some general waste from the facility. You could see piles of rock, gravel, asphalt, timber and other waste debris placed in this area. Unit 2 looked like waste material was placed and covered in this trench. It would be easy for a dump truck to come into this trench and place more waste in here and cover it.

We then visited the main steel plant. Outside the plant we saw the Shotblast Baghouse (17), the Baghouse Storage Area (16), and the Hydrochloric Acid Product Storage Tanks (11). These tanks (11) are up in the air so that they are gravity fed. It would be hard to classify Unit 11 as a SWMU unless you could document a release.

When inside the steel plant, we saw the Shot Blast Storage Area (15), the Empty Drum Storage Areas (12 & 13), the Municipal Waste Containers (21), the Zinc Oxide Dross Tanks (18), and the Oil Mist Eliminators (10). The shot blast is sieved steel product material and does need some improved general housekeeping. Other various product drums and municipal waste containers were also stored in areas throughout the main plant and in Areas 12, 13, 15, 18, and 21. Usuaally there are 10-20, 3 by 5 foot Dross Containers in the area which are then sent off site and recycled, but today, we only saw one container. The Oil Mist Eliminators draw off the "mist" from the rolling pin area of the plant and this "mist" is released to the air. These releases are most likley controlled by one of LTV's IEPA air permits.

We did not visit the M.S. Kaplan Company Area (with SWMU's 51 & 52 and AOC E, F, and G), or SWMU's 50, 48, or 49 because of the weather. SWMU 49, a "Sludge Dozer" should not have been classified as a SWMU. Other areas that should be

reclassified from SWMU's to AOC at this site are, (19) the Grease Traps and (20) the Sewer System.

When asked about AOC's A and B, the underground storage tanks (UST's), LTV said that within the past 4 years all the tanks have been replaced and meet all the UST requirements.

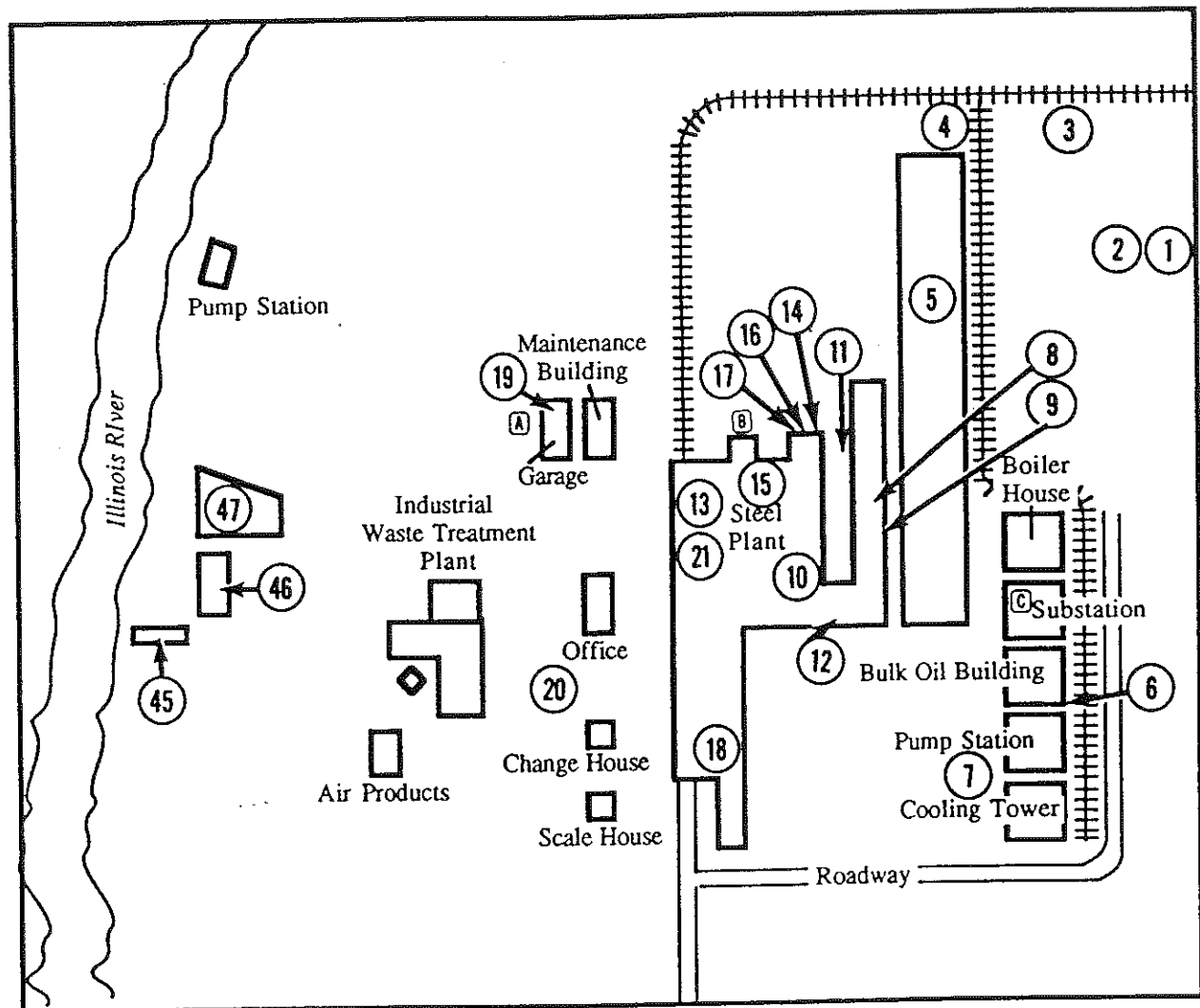
Conclusions

After reviewing the PR/VSI (3 maps attached) and touring the site some suggestions and recommendations are made here.

Soil sampling should be performed for an initial investigation at SWMU's: 1, 2, 32, 39, 40, 41, 45, 46, 47, 48, 50, 51, and 52. The reasons for the sampling of these SWMUs is because there may be a potential for release to the environment from these units of hazardous waste and hazardous constituents. Groundwater sampling around of SWMU's 45, 46, and 47 also seems appropriate for this preliminary investigation to show if there are hazardous wastes or constituents migrating to the Illinois River. If releases are found coming from SWMU's 1 & 2, groundwater sampling may be applicable here.

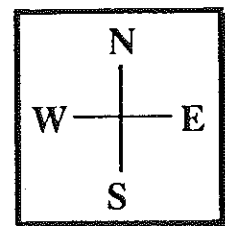
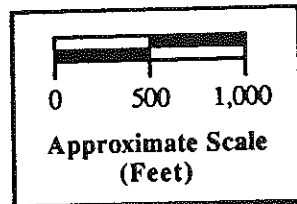
SWMU Location Map 2

■ LTV Steel Company
– Hennepin, Illinois



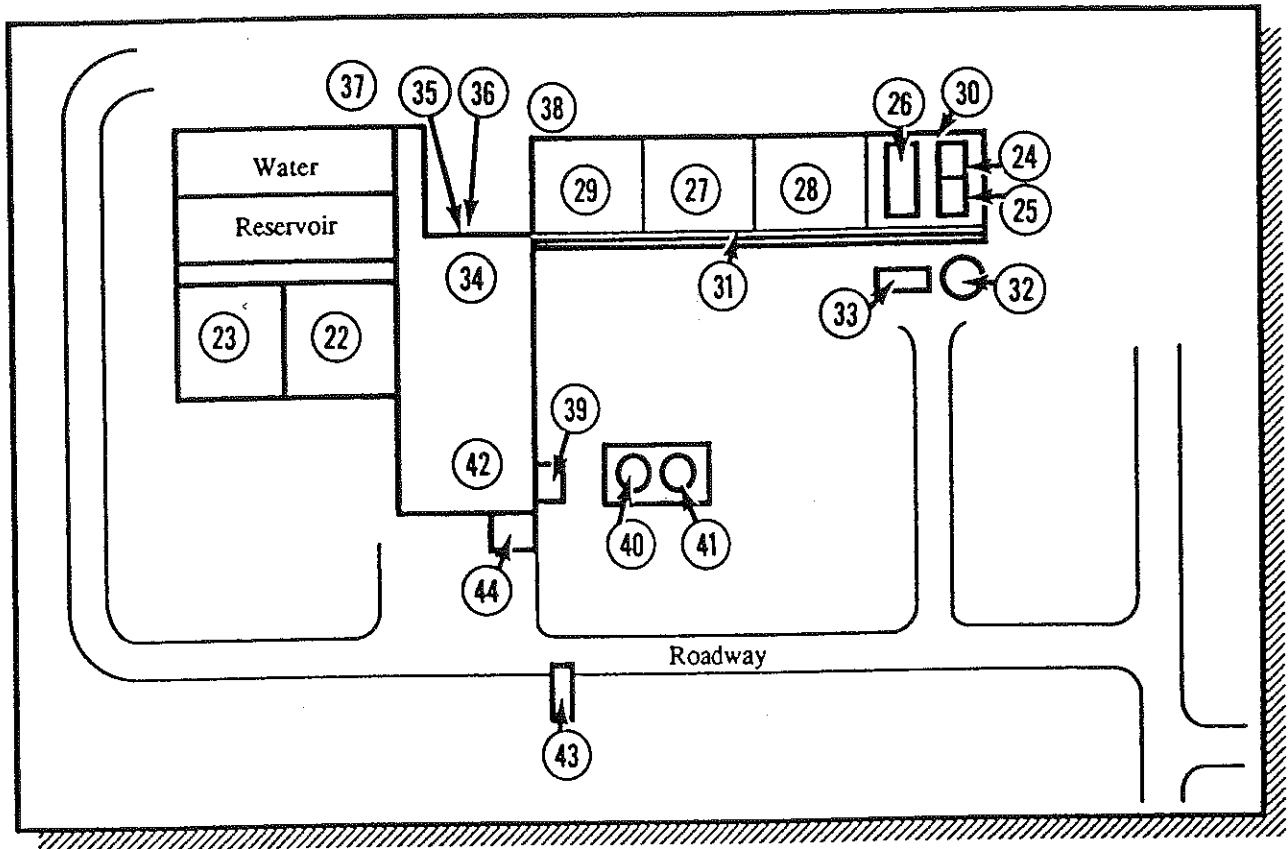
○ SWMUs

□ Areas of concern

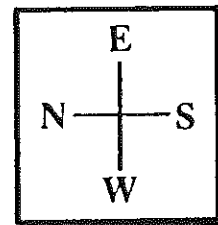
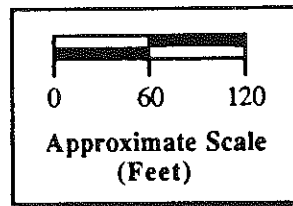


SWMU Location Map 3

- LTV Steel Company
 - Industrial Waste Treatment Plant
 - Hennepin, Illinois



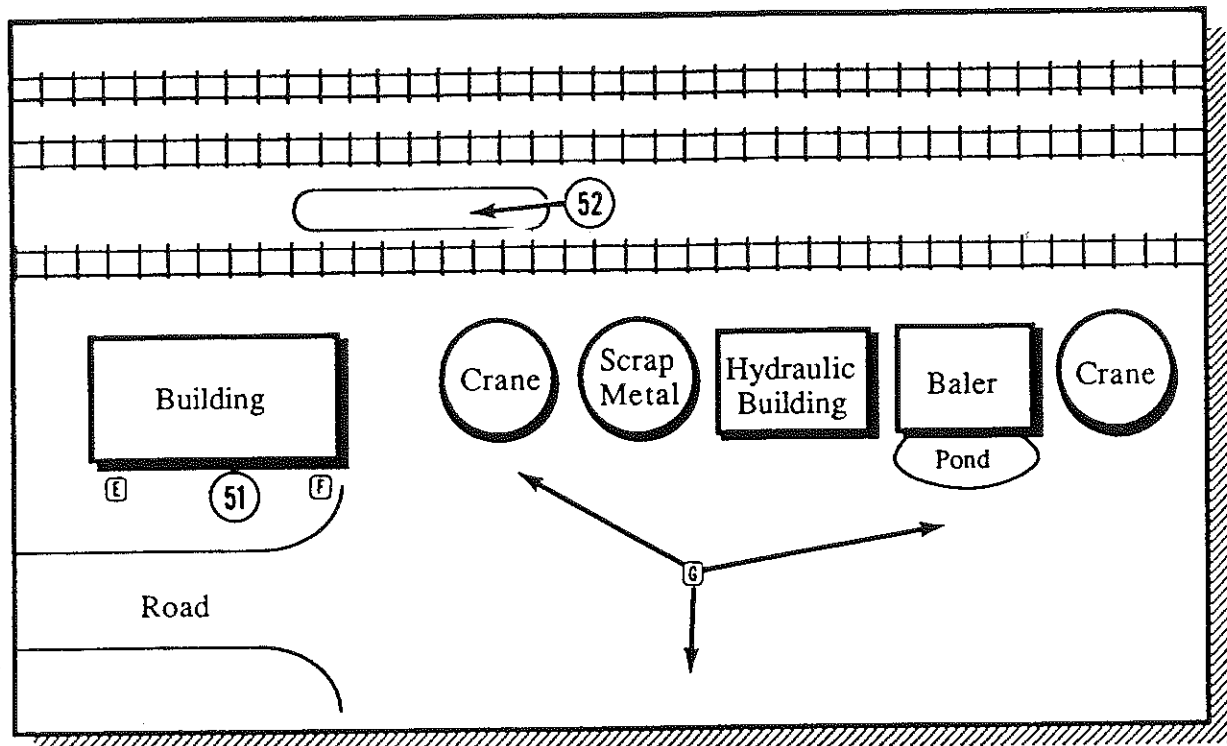
○ SWMUs



Reference 49

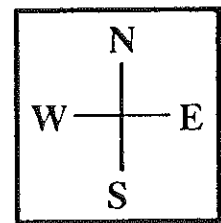
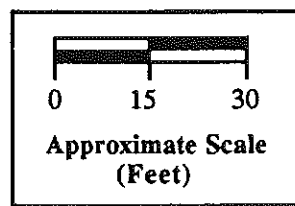
SWMU Location Map 4

- M.S. Kaplan Company
 - LTV Steel Company Property
 - Hennepin, Illinois



○ SWMUs

□ Areas of concern



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312 648 0111
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Management
Consultants

December 7, 1989

Mr. Bernie Orenstein
Regional Project Officer
U.S. Environmental Protection Agency
Region V, 5HR
230 South Dearborn Street
Chicago, Illinois 60604

ATKEARNEY
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DEC 7 1989

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Reference: EPA Contract No. 68-W9-0040; Work Assignment
No. R05-01-23; LTV Steel Company, Hennepin,
Illinois; EPA I.D. No. ILD000781591; PR/VSI
Report; Final Deliverable

Dear Mr. Orenstein:

Enclosed is the final Preliminary Review/Visual Site Inspection Report for the LTV Steel Company, Hennepin Works. Analytical results and deep well construction diagrams, Solid Waste Management Unit (SWMU) Location Maps, Areas of Concern (AOCs), VSI Field Notes, the VSI Summary Report, and the VSI Photograph Log are included as attachments to this report. A Summary of Suggested Further Actions is included separately in Section 4.0 as requested by the Region.

As agreed with Bernie Orenstein and Bob Fuhrer, this deliverable was delayed by one day.

The PR and VSI resulted in identification of 53 SWMUs and 7 AOCs. The only hazardous waste managed at the facility is waste pickle liquor (K062). All other waste streams have been managed as non-hazardous wastes. However, three of these waste streams have been documented to contain a variety of hazardous constituents at relatively low concentrations. These three are the sludge, waste oil, and effluent generated at the on-site Industrial Treatment Plant. The management and disposal practices for these wastes have resulted in a moderate to high potential for release of hazardous constituents from several units at

LTV. Based on the information gathered during the PR and VSI, a RCRA Facility Investigation (RFI) may be warranted for the following units and reasons:

- Steel Coil Yard (SWMU 5) because waste oils were spread as dust control for 17 years.
- Effluent Lagoon (SWMU 45) because the unlined unit receives hazardous constituents in the Industrial Treatment Plant effluent.
- Former Sludge Drying Beds (SWMU 47), Sludge Landfill (SWMU 48) and Former Sludge Spreading Area (SWMU 50) because treatment plant sludge was disposed of in these unlined units.

Several others units were evaluated to have a moderate to high release potential or were documented to have released moderate quantities of wastes containing hazardous constituents. We have recommended soil sampling at these units (by the facility) since an RFI appears warranted at the site. These units include:

SWMU 2.	Metal Waste Trench	1
SWMUs 3-4.	Railroad Container Storage Areas	2
SWMU 32.	Waste Oil Tank	3
SWMU 33.	Former Waste Oil Incinerator	4
SWMU 39.	Waste Pickle Liquor Sump and Pipes	5
SWMUs 40-41.	Waste Pickle Liquor Tanks	6
SWMU 46.	Former Sludge Lagoon	7
SWMU 51.	Kaplan Waste Oil Drum Area	8
SWMU 52.	Kaplan Burn Area	9
AOC G	Kaplan Facility Yard	10

Alternatively, clean-ups of these localized release areas could be negotiated with the facility. At the request of Chuck Wilk, the original EPA WAM for this project, we did not recommend Sampling Visits by the EPA for units with known releases.

A number of other SWMUs and AOCs had relatively low release potentials or have released relatively small quantities of wastes. For these units, we have suggested conducting inspections, modifying operations or improving containment systems in Section 4.0. Although these are mostly

Mr. Bernie Orenstein
December 7, 1989
Page Three

housekeeping suggestions, the suggestions will provide workable guidelines to help inspectors and facility operators prevent the need for corrective actions in the future.

As discussed with Chuck Wilk, we have included several units in this report for the purpose of listing all potential SWMUs and AOCs that are or formerly were located on LTV property. These include:

SWMUs 22 and 23.	River Water Clarifiers Nos. 1 and 2
SWMU 37.	Sludge Dump Trucks
AOC A	Former USTs at Maintenance Garage
AOC C	Electrical Transformer Area
AOC D	Above-Ground Farm Fuel Tanks
AOC E	Kaplan Gasoline UST
AOC F	Kaplan Diesel Fuel UST
AOC G	Kaplan Facility Yard

An area of potential trash and a horizontal tank were shown near a former gravel quarry on Figure 17 of Reference 35. This area is relatively isolated on the property. The Kearney Inspection Team and facility representatives attempted to access the area from two directions, but were unsuccessful in viewing these features. We suggest further verification be submitted by the facility.

This final report includes revisions as requested by Bob Fuhrer, the new EPA WAM. Please note that we have submitted new report copies which include the cover letter through Attachment B - SWMU Location Maps. Attachments C through F were not re-submitted since they did not change. Discard the draft reports, but retain Attachments C through F for inclusion with these new report copies.

If you have any questions concerning this report, please feel free to contact me or Greg Terdich, the Kearney Team Work Assignment Manager, who may be reached at (312) 993-8841.

Sincerely,

Greg M. Terdich

for Ann L. Anderson
Technical Director

Enclosure

cc: B. Fuhrer, EPA Region V
G. Hamper, EPA Region V
J. Grieve
G. Terdich

A. Glazer
A. Williams (w/o att.)
W. Rohrer, DPRA

3282E-CH

PRELIMINARY REVIEW/VISUAL SITE INSPECTION REPORT
RCRA FACILITY ASSESSMENT

of the

LTV Steel Company
Hennepin, Illinois
EPA I.D. No. ILD000781591

for the

Mr. Bernie Orenstein
United States Environmental Protection Agency
Region V
230 South Dearborn
Chicago, Illinois

by

A.T. Kearney, Inc.
222 South Riverside Plaza
Chicago, Illinois

EPA Contract No. 68-W9-0040
Work Assignment No. R05-01-23

December, 1989

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ATTACHMENTS

- A - LTV ANALYTICAL RESULTS AND WELL CONSTRUCTION DIAGRAMS
- B - SWMU LOCATION MAPS
- C - AREAS OF CONCERN
- D - VSI LOGBOOK NOTES
- E - VSI SUMMARY REPORT
- F - PHOTOGRAPH LOG

EXECUTIVE SUMMARY

A Preliminary Review/Visual Site Inspection (PR/VSI) was performed to identify and assess Solid Waste Management Units (SWMUs) and other Areas of Concern (AOCs) at LTV Steel Company in Hennepin, Illinois. The PR/VSI report summarizes the results of a review of files from the U.S. Environmental Protection Agency (U.S. EPA) and Illinois EPA (IEPA), interviews with facility personnel and a visual site inspection (conducted August 9 and 10, 1989) to evaluate the potential for releases of hazardous constituents from SWMUs and AOCs identified during the review.

The Hazardous and Solid Waste Amendments (HSWA) of 1984 expand the scope of the U.S. EPA's authority under the Resource Conservation and Recovery Act (RCRA) to require corrective action for the release of hazardous waste or constituents from SWMUs at facilities seeking a RCRA permit. This corrective action authority extends to all SWMUs and other areas that could potentially release hazardous constituents to the environment.

The first phase of the U.S. EPA's corrective action program is performance of a RCRA Facility Assessment (RFA). The RFA includes a PR of file materials, a VSI of the facility and, if necessary, a sampling visit (SV). The objectives of the RFA are to identify SWMUs and AOCs to assess their potential for releases of hazardous waste or constituents to the environment and to determine the need for further action. This document presents the results of the PR and VSI, in addition to release assessments and suggested further actions for the LTV facility.

LTV Steel Company is located in a rural area immediately northeast of Hennepin, Illinois. The facility owns approximately 7,000 contiguous acres, but the plant proper comprises about 450 acres plus a few non-contiguous land disposal units. Production began at this plant in 1967 and principal operations include cold forming, galvanizing and finishing operations of sheet steel. The primary waste streams consist of waste pickle liquor (K062), which is deep well injected at the site, and industrial wastewaters from the various operations which are treated at an on-site Industrial Treatment Plant prior to discharge into the Illinois River. The Hennepin Works is currently operating under RCRA Interim Status for the waste pickle liquor storage units; the deep well is regulated through an Underground Injection Control (UIC) Permit from IEPA. IEPA also permits the facility for air emissions from 9 units, for land disposal of sludge at the Sludge Landfill (SWMU 48) and for discharge of treated effluent from the Industrial Treatment Plant.

A total of 53 SWMUs and 7 AOCs were identified as a result of the PR and VSI. The unit locations are presented on the SWMU Location Maps included in Attachment B. The following table is a list of the SWMUs and AOCs that were identified at the LTV Steel Company, Hennepin Works:

Table 1

List of SWUMs and AOCs

<u>Unit No.</u>	<u>Unit Name</u>
1.	Wood and Packaging Wastes Trench
2.	Metal Waste Trench
3 and 4.	Railroad Container Storage Areas
5.	Steel Coil Yard
6.	Bulk Oil Sump
7.	Product Drum Storage Area
8.	Waste Pickle Liquor Holding Tank
9.	Pickle Line Fume Scrubber
10.	Oil Mist Eliminator
11.	Hydrochloric Acid Product Tanks
12-14.	Empty Drum Storage Areas
15.	Shot Blaster Drum Storage Area
16.	Bag House Drum Storage Area
17.	Shot Blaster Bag House
18.	Dross Tank
19.	Car Wash Grease Traps
20.	Industrial Sewer System
21.	Municipal Refuse Containers
22 and 23.	River Water Clarifiers Nos. 1 and 2
24.	Primary Mixing Tanks
25.	Primary Settling Tanks
26.	Secondary Mixing Tanks
27 and 28.	Wastewater Flocculator Clarifiers Nos. 1 and 2
29.	Sludge Thickener
30.	Inlet Flume
31.	Distribution Flume
32.	Waste Oil Tank
33.	Former Waste Oil Incinerator
34.	Sludge Filter System
35.	Sludge Bin
36.	Sludge Roll-Off/Hauler
37.	Sludge Dump Trucks
38.	Sludge Front-End Loader
39.	Waste Pickle Liquor Sump and Pipes
40 and 41.	Waste Pickle Liquor Tanks
42.	Deep Well Injection System

Table 1 (continued)

- iii -

<u>Unit No.</u>	<u>Unit Name</u>
43.	Underground Injection Well
44.	Waste Pickle Liquor Loading Pad
45.	Effluent Lagoon
46.	Former Sludge Lagoon
47.	Former Sludge Drying Beds
48.	Sludge Landfill
49.	Sludge Dozer
50.	Former Sludge Spreading Area
51.	Kaplan Waste Oil Drum Area
52.	Kaplan Burn Area
53.	Storm Sewer System

<u>AOC's</u>	<u>Description</u>
A	Underground Storage Tanks (USTs) at Maintenance Garage (3)
B	Diesel Fuel UST
C	Electrical Transformer Area
D	Above-Ground Farm Fuel Tanks
E	Kaplan Gasoline UST
F	Kaplan Diesel Fuel UST
G	Kaplan Facility Yard

Releases have been documented from or have potentially occurred from several units at the LTV facility. Releases from some of these units are regulated under NPDES and the UIC program. The following table presents a listing of the SWMUs and AOCs having a moderate to high potential for unregulated releases to the media of soil, groundwater, surface water or air, or the potential for subsurface gas generation. Suggested further actions are presented in Section 4.0.

Table 2

Units with Moderate to High Release Potential

<u>Unit No.</u>	<u>Unit Name</u>
2.	Metal Waste Trench
3 and 4.	Railroad Container Storage Areas
5.	Steel Coil Yard
24- 31.	Industrial Wastewater Treatment Units
32.	Waste Oil Tank
33.	Former Waste Oil Incinerator
39.	Waste Pickle Liquor Sump and Pipes

Table 2 (continued)

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<u>Unit No.</u>	<u>Unit Name</u>
40 and 41.	Waste Pickle Liquor Tanks
44.	Waste Pickle Liquor Loading Pad
45.	Effluent Lagoon
46.	Former Sludge Lagoon
47.	Former Sludge Drying Beds
48.	Sludge Landfill
50.	Former Sludge Spreading Area
51.	Kaplan Waste Oil Drum Area
52.	Kaplan Burn Area

<u>AOC's</u>	<u>Unit Name</u>
E	Kaplan Gasoline UST
F	Kaplan Diesel Fuel UST
G	Kaplan Facility Yard

1.0 INTRODUCTION

This report presents the results of a Preliminary Review/ Visual Site Inspection (PR/VSI) of LTV Steel Company (LTV) in Hennepin, Illinois (EPA I.D. No. ILD000781591). The purpose of this report is to:

1. Identify all solid waste management units (SWMUs) and other areas of concern (AOCs) which are located at the facility.
2. Use information obtained from the PR and VSI to assess the potential for release of hazardous waste or hazardous constituents from each SWMU and AOC.
3. Determine if further measures for each SWMU and AOC should be taken to safeguard human health and the environment from a release.

The information used in preparing this report was compiled from file materials obtained from the Illinois Environmental Protection Agency (IEPA) in Springfield, Illinois, the U.S. Environmental Protection Agency (U.S. EPA) Region V office in Chicago, Illinois, the PR Report submitted to the U.S. EPA on July 21, 1989, information obtained in response to the VSI Notification and Information Needs Letter, and information gathered during a VSI of the facility on August 9 and 10, 1989.

2.0 GENERAL DESCRIPTION

2.1 Facility Description

LTV Steel Company in Hennepin, Illinois, is a processor of steel coils and sheets. The facility owns approximately 7,000 contiguous acres; however, the plant proper is comprised of approximately 450 acres. The plant location is depicted on Figures 1 and 2. Since 1967, principal operations have included cold forming, galvanizing, and metal finishing operations. The facility typically employs approximately 750 to 800 people over a 24-hour period and is a three-shift, 365 days a year operation. LTV also operates a Machine Shop, Mobile Equipment Garage, Boiler House, Substation, Recirculating Water Pump House, Bulk Oil Building, Barge Loading Area, a rail spur, underground storage tanks, a Deep Well Injection Facility and an Industrial Treatment Plant (Refs. 1 and 40).

The remaining 6,550 acres are predominantly managed by LTV for farming. Additionally, two companies are leasing land that operate in support of LTV operations. Air Products Company supplies atmospheric gases (hydrogen and nitrogen) that are required in the annealing process. M.S. Kaplan Company is a steel recycler located off the LTV rail spur, which operates as a steel scrap baling and distribution center (Ref. 40).

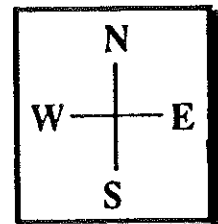
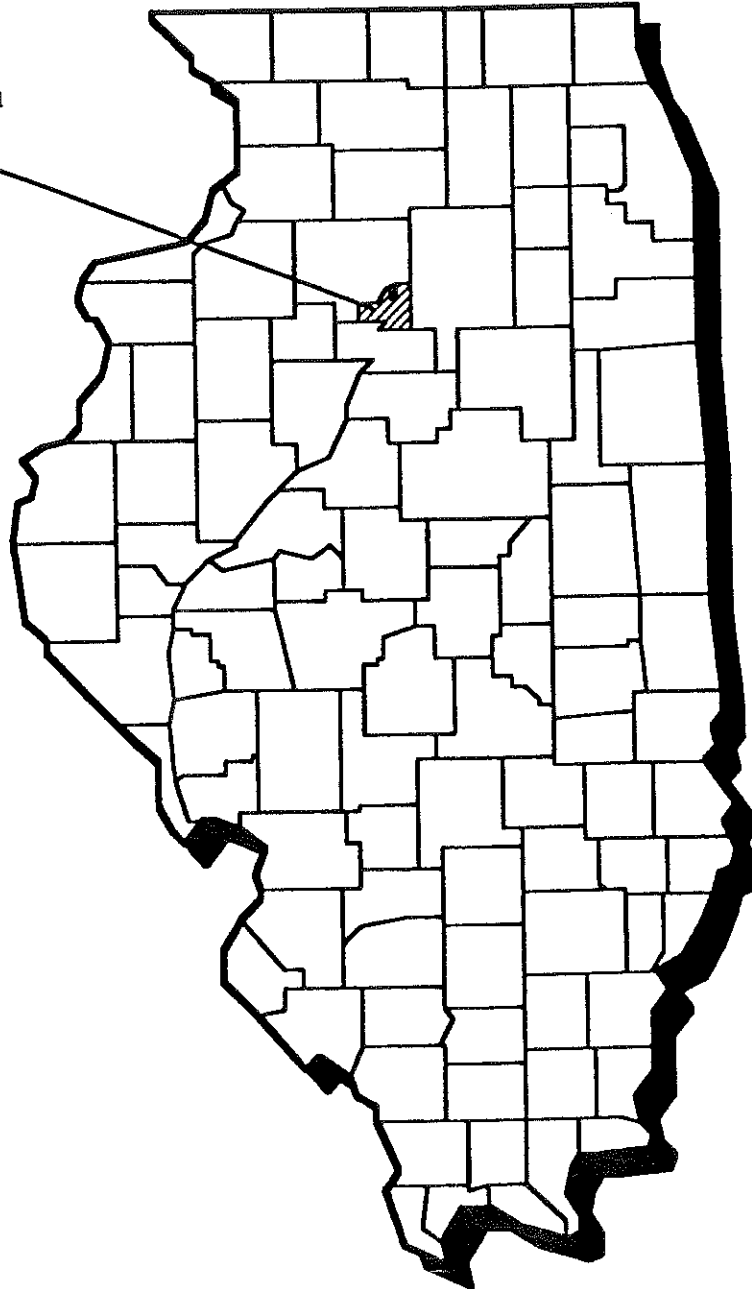
The incoming steel coils, delivered from the Indiana Harbor, Indiana and Cleveland, Ohio LTV steel plants, are processed through a combination of steps: 1) continuous hydrochloric pickling; 2) five-stand tandem cold reduction milling; 3) batch (coils) or continuous (strip) annealing; 4) galvanizing; 5) chromate or phosphate coating; 6) temper milling; and 7) shearing and slitting (Refs. 2 and 40). Steps 3 through 7 are used as required by the particular order being processed.

The steel is initially processed through the continuous hydrochloric pickler to remove scales and oxides from the steel. Cold rolling is a generic term applied to the operation of passing unheated metal through rollers for the purpose of reducing its thickness; producing a smooth, dense surface; and with or without subsequent heat treatment, developing controlled mechanical properties (Ref. 3).

Site Location Map

- LTV Steel Company
- Hennepin, Illinois

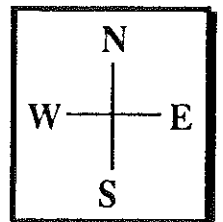
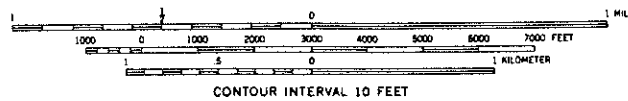
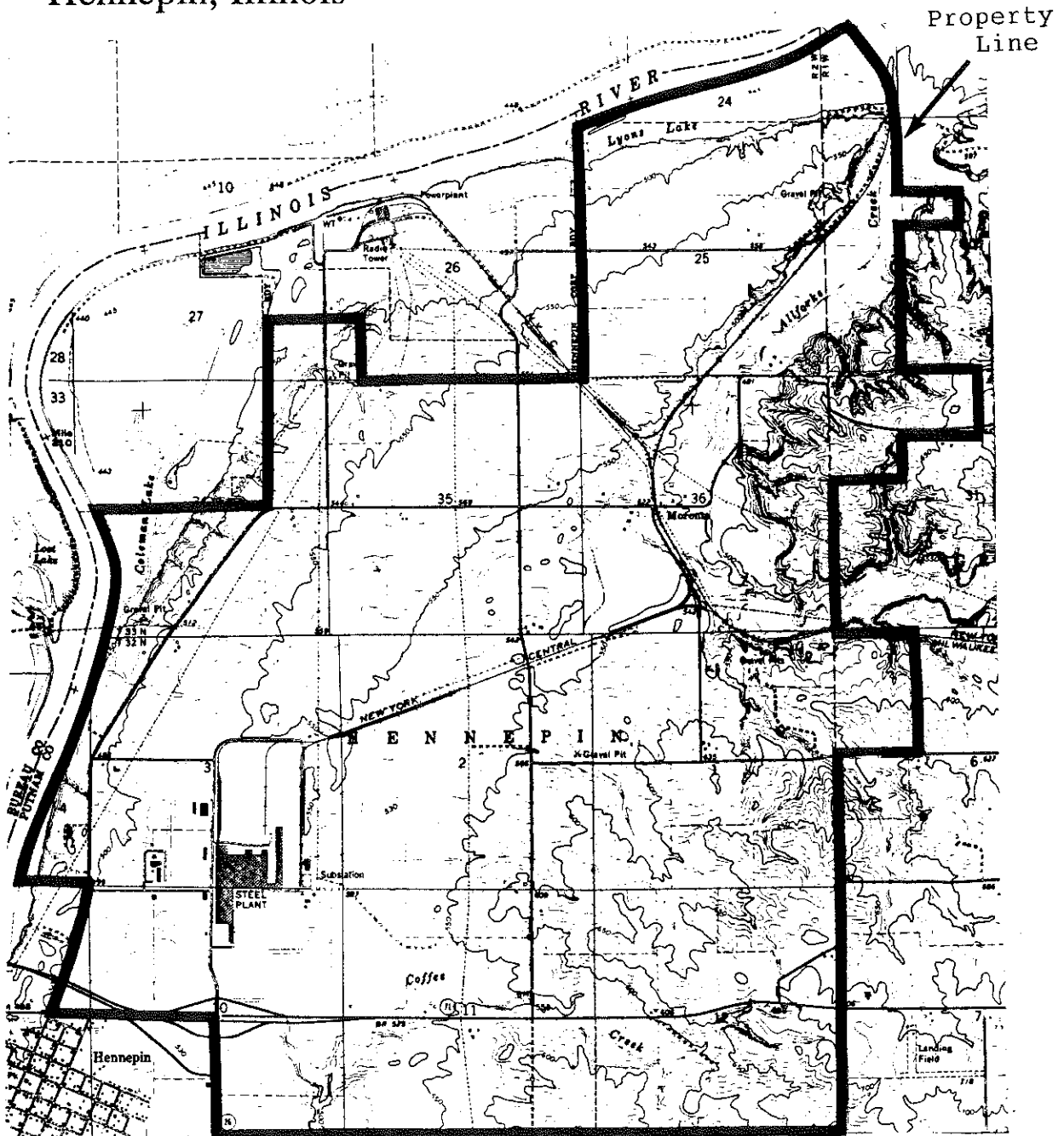
Putnam
County



Reference 1

Site Area Map

- LTV Steel Company
- Hennepin, Illinois



At LTV Steel, the flat steel is cold-reduced on a five-stand, four-high tandem mill. The steel is then conveyed to the annealing furnace which softens the steel surface in a non-oxidizing atmosphere, and prepares one-third of the LTV steel for galvanizing by making the surface reactive with molten zinc (Ref. 3). The facility has both batch and continuous anneal furnaces. Eighteen batch anneal furnaces handle the coiled steel and a 1,000 foot-long continuous anneal furnace handles uncoiled strips (Ref. 40).

The portion of the LTV steel processed through the continuous anneal furnace is conveyed directly to the galvanizing line. Coating the strip steel with zinc, or galvanizing, protects it from corrosion in service. The steel passes through 900°F molten zinc. The galvanized steel is then chemically treated at LTV Steel to protect the surface from humid or wet-storage stains. The treatments are produced by coating the galvanized sheet with a phosphate or chromate coating. A phosphate coating is typically used when the sheet steel is to be subsequently painted. The treatment provides both a physical barrier film and a conversion film that inhibits corrosion of the zinc surface (Ref. 3).

Sheet tempering is conducted for a number of purposes: 1) stiffen the steel after softening caused by the anneal process; 2) suppress the yield-point elongation; 3) impart the necessary surface finish; and 4) improve the shape and flatness of sheet products. A vegetable or animal oil coating is applied in the tempering process. If required by the customer, the steel is then sheared into sheets of ordered length. Sheet slitters then employ mating circular knives, mounted on arbors, to continuously remove the desired amount from both edges of the strip. This process establishes accurate and uniform width and produces parallel and reasonably smooth edges (Ref. 3).

Two-thirds of the steel produced at this facility is shipped out in coil form; the other one-third is in sheet form. Forty percent of the LTV steel is used for electric motor lamination material. Industries such as automotive, appliance, and construction comprise the remaining 60 percent of the steel usage (Ref. 40).

The facility presently holds nine air permits with the Illinois Environmental Protection Agency (IEPA) Division of Air Pollution Control (APC), a National Pollutant Discharge Elimination System (NPDES) permit for three outfalls, an IEPA Division of Land Pollution Control permit for on-site land disposal of treatment plant sludges, and an Underground Injection Control (UIC) permit

for the Deep Well Injection Facility. The air permits involve: 1) two for the natural gas-fired boilers; 2) one for the Pickle Line Fume Scrubber (SWMU 9); 3) two for the tandem mill Oil Mist Eliminator (SWMU 10); 4) two for the natural gas fired batch anneal furnaces; 5) one for the natural gas fired galvanizing line furnace; and 6) one for the two underground storage tanks containing vehicle fuels (Refs. 7, 10, 24, 25, 31, and 40).

The LTV facility's most recent National Pollutant Discharge Elimination System (NPDES) permit was issued in 1988 (Ref. 30). Since 1974, the IEPA has conducted quarterly compliance monitoring inspections which included sampling of LTV's NPDES outfalls under the authority of NPDES permit requirements. Since October of 1982, the IEPA implemented requiring monthly discharge monitoring reports from LTV at NPDES outfall locations (Ref. 18). Since June of 1983, the LTV NPDES permit has been designated for three outfalls and four sampling locations (Ref. 19).

According to LTV Steel's NPDES applications, wastewaters are generated from the following process areas: boilers, 193 gallons per minute (gpm) of blowdown; recirculated cooling water system, 72 gpm of blowdown; pickle line, 549 gpm of waste rinse water containing ferric chloride and hydrochloric acid; tandem mill, 108 gpm of oily wastewaters; temper mill, 51 gpm of oily wastewaters; galvanizing line, 223 gpm of chromium, zinc, phosphate, nitrate and fluoride-contaminated wastewaters; finishing, 50 gpm of oily wastewaters with suspended solids; water waste service system, 559 gpm of mixed wastewaters from various sumps and floor drains; and maintenance areas, 53 gpm of oily wastewaters. These waste streams are routed through the Industrial Treatment Plant (SWMUs 24 through 31), which generates 1,858 gpm of treated effluent. The effluent combines with 642 gpm of non-contact cooling water from Air Products Company and storm runoff collected by the Storm Sewer System (SWMU 53) prior to discharge into the Effluent Lagoon (SWMU 45). This lagoon routes approximately 2,500 gpm of treated effluent, cooling water and storm water runoff to the Illinois River via a NPDES-regulated outfall. In addition, the sludge generated at the Industrial Treatment Plant is eventually disposed of in the on-site Sludge Landfill (SWMU 48) (Refs. 2, 41).

All industrial wastewaters generated in the plant (except from the pickle line and chromate coating operation) are channeled through the Industrial Treatment Plant. The Industrial Treatment Plant channels the waters through an inlet flume to two Primary Mixing Tanks (SWMU 24) in series. The waters then flow to two Primary Settling Tanks (SWMU 25) where heavy solids dropout and oils are

skimmed off and routed to the Waste Oil Tank (SWMU 32). The waters are channeled to two Secondary Mixing Tanks (SWMU 26) where ferric chloride (waste pickle liquor) and lime are added as a secondary coagulant and a neutralizer, respectively. Calgon Poly EZ 026 polymer is added in the Distribution Flume (SWMU 31) before the waters empty into one of two Wastewater Flocculator Clarifiers (SWMUs 27 and 28). Solids settle out in the Clarifiers and the effluent flows to the Effluent Lagoon (SWMU 45). The lagoon discharges into the Illinois River via outfall 001A. The solids are handled through the Sludge Thickener (SWMU 29). Thickened sludges are mixed with cement dust, held in a tank, filtered, and conveyed out; this sequence is conducted through the Sludge Filter System (SWMU 34). The sludges are then dropped into the Sludge Roll-Off/Hauler (SWMU 36), and finally disposed of at the Sludge Landfill (SWMU 48) (Ref. 40).

The pickle liquor (2 to 3 percent hydrochloric acid and 20 percent ferric chloride) and chromate-coating wastewaters are channeled through a separate piping system. The system consists of fiberglass and polypropylene-lined steel pipes routed through a tunnel as part of the Waste Pickle Liquor Sump and Pipes (SWMU 39). The pipes and sump act as a transfer system for the waste pickle liquor prior to its storage in the Waste Pickle Liquor Tanks (SWMUs 40 and 41). From the tanks, the waste pickle liquor is routed through the Deep Well Injection Facility (DWIF) comprised of both the Deep Well Injection System (SWMU 42) and the Underground Injection Well (SWMU 43) (Ref. 40).

The LTV Resource Conservation and Recovery Act (RCRA) Part A Application lists two processes at the Hennepin Works: tank storage and injection well disposal. LTV listed the EPA Hazardous Waste Code K062 for spent pickle liquor as the only hazardous waste generated on-site (Ref. 16).

During the PR, 33 SWMUs and four AOCs were identified. As a result of the subsequent VSI, 16 SWMUs were deleted, 12 SWMUs were renamed, two SWMUs became four, and 34 SWMUs were added. The four AOCs were deleted after the VSI and replaced with seven new units. The VSI Inspection Summary Report presents the changes in detail (Attachment D).

During the completion of the PR/VSI Report, a total of 53 SWMUs and 7 AOCs were identified. The SWMU Location Maps are presented in Attachment A. The only RCRA-regulated units are the Waste Pickle Liquor Holding Tank (SWMU 8), Waste Pickle Liquor Tanks (SWMUs 40 and 41) and DWIF (SWMUs 42 and 43). LTV holds an Underground Injection Control permit for the DWIF, and consequently is permitted by RCRA for this unit through Permit by Rule (Ref. 46). Table 2-1 is a list of the SWMUs, AOCs and the SWMU Location Map on which they are presented.

Table 2-1

List of SWUMs and AOCs

<u>Unit No.</u>	<u>Unit Name</u>	<u>SWMU Location Map</u>
	<u>SWMUs</u>	
1.	Wood and Packaging Wastes Trench	2
2.	Metal Waste Trench	2
3 and 4.	Railroad Container Storage Areas	2
5.	Steel Coil Yard	2
6.	Bulk Oil Sump	2
7.	Product Drum Storage Area	2
8.	Waste Pickle Liquor Holding Tank*	2
9.	Pickle Line Fume Scrubber	2
10.	Oil Mist Eliminator	2
11.	Hydrochloric Acid Product Tanks	2
12-14.	Empty Drum Storage Areas	2
15.	Shot Blaster Drum Storage Area	2
16.	Bag House Drum Storage Area	2
17.	Shot Blaster Bag House	2
18.	Dross Tank	2
19.	Car Wash Grease Traps	2
20.	Industrial Sewer System	2
21.	Municipal Waste Containers	2
22 and 23.	River Water Clarifiers Nos. 1 and 2	3
24.	Primary Mixing Tanks	3
25.	Primary Settling Tanks	3
26.	Secondary Mixing Tanks	3
27 and 28.	Wastewater Flocculator Clarifiers Nos. 1 and 2	3
29.	Sludge Thickener	3
30.	Inlet Flume	3
31.	Distribution Flume	3
32.	Waste Oil Tank	3
33.	Former Waste Oil Incinerator	3
34.	Sludge Filter System	3
35.	Sludge Bin	3
36.	Sludge Roll-Off/Hauler	3
37.	Sludge Dump Trucks	3
38.	Sludge Front-End Loader	3
39.	Waste Pickle Liquor Sump and Pipes	3
40 and 41.	Waste Pickle Liquor Tanks*	3
42.	Deep Well Injection System*	3
43.	Underground Injection Well*	3
44.	Waste Pickle Liquor Loading Pad	3
45.	Effluent Lagoon	2

Table 2-1 (continued)

<u>Unit No.</u>	<u>Unit Name</u>	<u>SWMU Location Map</u>
	<u>SWMUs</u>	
46.	Former Sludge Lagoon	2
47.	Former Sludge Drying Beds	2
48.	Sludge Landfill	1
49.	Sludge Dozer	1
50.	Former Sludge Spreading Area	1
51.	Kaplan Waste Oil Drum Area	4
52.	Kaplan Burn Area	4
53.	Storm Sewer System	Not shown

<u>Unit No.</u>	<u>Description</u>	<u>SWMU Location Map</u>
A	Underground Storage Tanks (USTs) at Maintenance Garage(3)	2
B	Diesel Fuel UST	2
C	Electrical Transformer Area	2
D	Above-Ground Farm Fuel Tanks	1
E	Kaplan Gasoline UST	4
F	Kaplan Diesel Fuel UST	4
G	Kaplan Facility Yard	4

*Unit numbers 8, 40, 41, 42 and 43 are the only RCRA-regulated units at this facility and manage EPA Hazardous Waste No. K062.

2.2 Facility Background

The LTV Steel Company, Hennepin, Illinois facility initially operated under the title of Jones and Laughlin Steel Corp. (J and L Steel), a wholly-owned subsidiary of LTV Corp., until 1984, when the company reorganized and renamed the facility LTV Steel Company.

Before the Hennepin Works began operating in late 1967, the property was utilized as farmland. The majority of the contiguous property remains cultivated (Ref. 40).

J&L submitted a RCRA Part A Application for interim status as a hazardous waste management facility in November of 1980 (Ref. 16).

In August of 1984, LTV received a Compliance Inquiry Letter from the IEPA regarding four violations pertaining to an interim status standards evaluation of a hazardous waste treatment, storage, and/or disposal facility. These violations were: 1) no rationale for their waste analysis plan, 2) contingency plan was not acceptable, 3) the inspection schedule did not include safety and emergency equipment, and 4) warning signs had not been posted (Ref. 20).

In August and September of 1984, LTV sent letters to the IEPA indicating that they planned to withdraw their Part A Application since the facility reported that hazardous waste was stored for less than 90 days (Ref. 21). However, LTV also indicated that after 1980, the facility may have stored hazardous waste for more than 90 days. The facility submitted a closure plan for the two 150,000 gallon Waste Pickle Liquor Tanks (SWMUs 40 and 41) in which there was no planned date for closure (Ref. 22).

In September of 1987, LTV resubmitted their RCRA Part A Application to correct the facility name from Jones and Laughlin to LTV for the record. However, in October of that year, LTV again requested withdrawal of their Part A Application (Ref. 27).

In January of 1988, the IEPA referred the LTV facility to the U.S. EPA for issuance of an Administrative Order for non-compliance with 35 Illinois Administrative Code Part 725 Subpart H in failing to update both their closure costs and financial assurance document (Ref. 29).

During construction of the facility in 1966, the State of Illinois Sanitary Water Board (ISWB) permitted LTV to install and operate a Deep Well Injection Facility (DWIF) for disposal of their waste hydrochloric and chromic acids. The DWIF was completed to a depth of 4,868 feet following the ISWB requirements (Ref. 4). LTV was re-permitted to operate the DWIF in 1972 under the IEPA Division of Water Pollution Control (Ref. 8).

In January of 1976, the DWIF injection stringer hanger failed causing it to fall through the open hole. The IEPA requested LTV to cease operating the well, pressure test the well, and run casing inspection logs (Ref. 12). In December of 1985, the IEPA denied LTV an Underground Injection Control (UIC) permit, because of LTV's request to waive the well packer requirement for the DWIF (Ref. 23). Consequently, LTV reported in September of 1986 that they were operating their DWIF under RCRA Interim Status until their DWIF design met UIC requirements (Ref. 26).

In December of 1987, LTV was granted the final UIC permit by the IEPA which expires in August, 1992 (Ref. 28). Therefore, the LTV DWIF is RCRA permitted through Permit by Rule (Ref. 46).

Documented releases have occurred at the facility. In April of 1977, approximately 1,000 gallons of soluble rolling oil spilled onto the property grounds. Reportedly, 90 percent of the spill was retained, while the remaining portion entered the Storm Sewer System (SWMU 53) which discharged into the Effluent Lagoon (SWMU 45) (Ref. 13). One month later, in May, 1977, a spill of approximately 7,000 gallons of waste pickle liquor (estimated to be two percent hydrochloric acid and 20 percent ferric chloride) occurred. LTV reported that 5,000 gallons flowed into the Industrial Treatment Plant, and approximately 2,000 gallons entered the Illinois River untreated (Ref. 14). In July of 1982, a fiberglass pipe to one of the 150,000 gallon Waste Pickle Liquor Tanks (SWMUs 40 and 41) cracked, and the majority of the approximately 50,000 to 100,000 gallons of waste pickle liquor released was pumped into an empty Wastewater Flocculator Clarifier (SWMUs 27 and 28). In the clarifier, the acid waste was neutralized with lime (Refs. 17, 56).

2.3 Environmental Setting

A. Meteorology

The LTV Steel Company Hennepin works is located in the northwest corner of Putnam County in north central Illinois. This region has a continental climate that is controlled by storm systems and weather fronts that move in a general eastward direction across the area. The storm systems are most frequent during the winter and spring months causing relatively cloudy conditions during those seasons. The summer is characterized by much sunshine with interspersed thunderstorms of relatively short duration (Ref. 32).

The winters are relatively long and cold, with low temperatures typically remaining below freezing during November through March. Summers are warm and moderately humid; on average, high temperatures exceed 90°F approximately 30 times during May through September. January has the coldest average monthly temperature of 21.7°F, while July has the warmest monthly average of 75.0°F. The overall average yearly high temperature is 61.2°F, with an average yearly low of 39.8°F (Ref. 32).

Precipitation falls rather uniformly over large areas of the region during the fall, winter, and spring seasons. Summer rainfall is primarily the result of brief, localized showers. These summer thunderstorms may be accompanied by hail, strong winds and tornadoes. However, tornado activity occurs mainly during March through June. The average annual precipitation is 34.8 inches, with the wettest time occurring during April through September. The average monthly precipitation ranges from approximately 3 to 4 inches during that period. The highest average monthly precipitation occurs in July at 4.05 inches. Snowfall for the year averages 30.8 inches and primarily occurs during November through March. The highest average monthly snowfall of 8.4 inches occurs during January (Ref. 32).

Information about wind direction and speed for this site was obtained from the closest reporting stations which are in Peoria and Rockford, Illinois. Winds from the northerly and westerly directions are common during November through May, but periods of southerly winds can also occur during that time. The remainder of the year is characterized by winds from the south and southwest. Average wind speeds range from 7.7 mph in August to approximately 12 mph in March and April (Ref. 32).

The following units have been determined to have a moderate to high potential for unregulated releases to air:

SWMUs 24-31.	Industrial Wastewater Treatment Units
SWMU 32.	Waste Oil Tank
SWMU 33.	Former Waste Oil Incinerator
SWMU 44.	Waste Pickle Liquor Loading Pad
SWMU 46.	Former Sludge Lagoon
SWMU 47.	Former Sludge Drying Beds
SWMU 48.	Sludge Landfill
SWUM 50.	Former Sludge Spreading Area
SWMU 51.	Kaplan Waste Oil Drum Area
SWMU 52.	Kaplan Burn Area

B. Floodplain and Surface Waters

The LTV Steel facility is located in the northwest corner of Putnam County, Illinois. The Illinois River is located immediately west and north of the property, and actually forms a portion of the west and north property boundaries. The southern portion of Coleman Lake is present on the western portion of the property where the lake connects to the Illinois River. The majority of this lake is situated on the Donnelly State Wildlife Area; this nature conservatory separates the northwest portion of the LTV property from the Illinois River. Lyons Lake is located along the Illinois River in the extreme northeast portion of the LTV Steel property. This entire lake is contained on LTV land. Turner Lake is located approximately one-quarter to one-half mile northeast of LTV Steel property. This lake is located a short distance south of the Illinois River (see Figure 2). Based on the available information, it appears that these three lakes represent former channels or backwater areas of the Illinois River (Refs. 5, 33, 54).

Two creeks are also present on portions of this site as shown on Figure 2. Coffee Creek crosses the central portion of the south property boundary. This creek essentially flows northwesterly about one-quarter mile north of the property line, then turns southwesterly off the property. Coffee Creek eventually flows through the town of Hennepin and empties into the Illinois River. The second creek, Allforks Creek, flows across the east-central and northeast areas of LTV Steel. This creek enters the site near the central portion of the east property boundary and flows in northwesterly and northeasterly directions until it eventually drains into the Illinois River near the northeast corner of the site. Allforks creek essentially parallels the Conrail railroad tracks in this area (Refs. 33, 54).

Information from Federal Flood Insurance Rate Maps indicates that 100-year floodplains are present adjacent to Allforks Creek on the property. These areas range from approximately 100 feet to 1,200 feet wide, and are generally larger as the creek progresses toward the Illinois River. The floodplain along the Illinois River in the northern portion of the site extends approximately 200 to 300 feet south of Lyons Lake. The Flood Insurance Rate Map did not address the Illinois River along the site's western boundary because that area is within the Village of Hennepin incorporated area. However, aerial photos and geologic maps indicate a floodplain in this area. Facility representatives also stated that seasonal flooding occurs in the lowlands along the east bank of the river (Refs. 33, 35, 40, 53, 54, 55).

The following units have been determined to have a moderate to high potential for unregulated releases to surface waters on and near the LTV facility:

SWMU 45.	Effluent Lagoon
SWMU 48.	Sludge Landfill

C. Soils and Geology

The LTV Steel facility is located in a primarily undeveloped area immediately northeast of Hennepin, Illinois. The plant buildings are concentrated in the southwest corner of the site. The soils in the immediate area of the plant have been reworked during construction. These soils have been classified by the Soil Conservation Service as loamy Orthents or Urban Land. A majority of the site consists of cultivated farm land which contains several different soil series. The majority of these soils consist of loams, silt loams, and sandy loams; however, silty clay loams, gravelly loams and loamy fine sands are interspersed throughout the site. In general, these soil types have moderate runoff and permeability characteristics. Many of these soils are calcareous in nature (Ref. 33).

Soils along the Illinois River and adjacent lakes consists primarily of the Moundprairie silty clay loam. These soils have a water table within two feet of the ground surface during most of the year and typically remain wet and are subject to seasonal flooding. The soils along Allforks Creek consists primarily of Huntsville silt loam and Landes fine sandy loam. These soils are found in relatively flat areas adjacent to the creek and are

characterized by slow surface runoff. The Huntsville soils have a moderate permeability rate, while the Landes soils have a moderately rapid to rapid rate. The seasonal high water table generally rises to within four to six feet of the ground surface during the spring. These soils are occasionally flooded for brief periods during January through June (Ref. 33).

The unconsolidated deposits covering most of the LTV property consist of high level terrace soils underlain by glacial outwash as shown on Figure 3. These soils are primarily made up of sands and gravels that are on the order of 150 to 200 feet thick. Scattered areas of wind-blown sand are also present throughout the LTV property. Additionally, alluvial soils occur adjacent to the Illinois River, Allforks Creek, Coffee Creek, and smaller drainage paths at the site. The alluvium consists primarily of sandy and clayey silts with interbedded sand and gravel lenses. The wind-blown sand and alluvial deposits are typically less than 20 feet thick (Ref. 53).

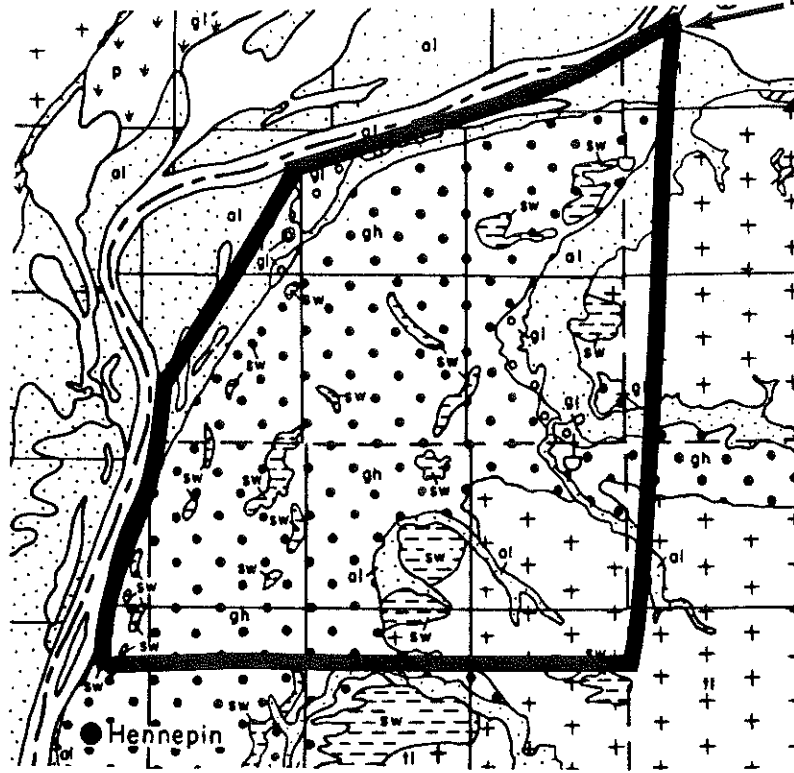
Facility representatives provided soil boring logs for Boring Nos. 25 through 30 which were drilled in the eastern portion of the plant building and coil yard in 1965. A majority of the soils consisted of fine and fine to coarse sands and silty sands. Many of the strata contained varying amounts of fine to coarse gravel. Intermittent layers of silts and clays were encountered above depths of approximately 50 feet in five of the borings. The borings were terminated at depths of 55 to 70 feet below the original ground surface (Ref. 62).

The LTV site is located within a geologic structure known as the Illinois Basin. This basin is elliptically shaped with its major axis extended in a northwest to southeast direction, from the northwest portion of Illinois into Indiana and Kentucky. The Illinois Basin is a depositional area containing predominantly marine sedimentary sequences which range in thickness from approximately 1,500 feet in the north to 15,000 feet in the south. The LaSalle Anticlinal Belt is the dominant regional structure within the Illinois Basin, and extends from LaSalle County in north-central Illinois to Lawrence County in southwest Indiana. The Sandwich Fault Zone is located to the northeast of the site and extends for approximately 150 miles. Movement along this fault zone is expected to have occurred in conjunction with movements along the LaSalle Anticline in the Pennsylvanian Age and later (Ref. 34).

Site Surficial Geology Map

- LTV Steel Company
- Hennepin, Illinois

Approximate
Site Boundary



AREAS UNDERLAIN BY UNCONSOLIDATED DEPOSITS

(Exposed or at shallow depths)

DOMINANTLY SILT AND CLAY (Mostly poorly sorted and unsorted materials)

al Alluvium. Deposits of modern rivers and streams in floodplains. Largely clayey silt and sandy silt with lenses of sand and gravel. Generally less than 20 feet thick. In the Illinois Valley west of Starved Rock, it is as much as 40 feet thick and it overlies thick deposits of sand and gravel of the Henry Formation. In the Illinois Valley east of Starved Rock, it is largely sand and gravel 15-20 feet thick under thin silt and it overlies bedrock formations. (Cahokia Alluvium)

ti Till. Mostly unsorted calcareous pebbly silty clay deposited by glaciers. Contains scattered cobbles and boulders and, in places, lenses of sand and gravel. Generally 25-50 feet thick but as much as 100 feet thick in deep valleys in the bedrock surface, where it includes the Glasford and Banner Formations. The till has a thin cover of clayey silt (Richland Loess), the thickness of which is shown on the small inset map. (Wedron Formation)

GRAVEL AND SAND

gh High-level terraces underlain by glacial outwash. Surfaces are 75-100 feet above the Illinois River. Mostly fine gravel and pebbly sand, but the upper part is locally coarser and bouldery, as along Alllocks Creek, northeast of Hennepin. Generally 10-30 feet thick in the tributary valleys, but as much as 150-200 feet thick in the large terrace on which Hennepin is located. (Henry Formation)

sw Low-level terraces underlain by deposits of the Chicago Outlet River. Surfaces are commonly 20-40 feet above the Illinois River. Mostly fine to coarse gravel, coarser and more uniformly sorted than the high-terrace deposits. Largely 20-50 feet thick along the Illinois Valley and 10-20 feet along tributaries. (Henry Formation)

SAND

sd Wind-blown sand. Well-sorted medium sand in dunes and in sheet deposits between and near the dunes. Generally less than 20 feet thick. (Parkland Sand)

sd Deltas deposited in glacial lakes. Areas of deltas (described under gravel and sand) in which the material is dominantly coarse to medium sand, partly pebbly. (Henry Formation)

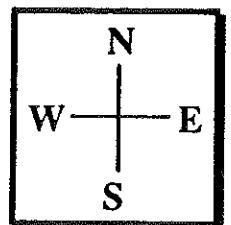
PEAT AND MUCK

pm Swamp and lake deposits. Mostly peat, peaty silt, and muck, interbedded in places with silt and fine sand. Locally include thin marl deposits. Generally more than 3 feet thick. Some deposits have been modified by drainage and cultivation. (Kewaskaw Peat)

0 1 2 3 4 Miles

Reference 53

0 1 2 3 4 5 Kilometers



The geologic strata at the LTV Steel site are summarized in Table 2-2 below, and generalized geologic cross sections are presented on Figures 4 and 5. A location map for the geologic cross sections is presented in Figure 6. The classifications, thicknesses and elevations above mean-sea level are based upon data from the underground injection well at the site (Ref. 34).

The following units have been determined to have a moderate to high release potential to soils or bedrock:

SWMU 2.	Metal Waste Trench
SWMUs 3 and 4.	Railroad Container Storage Areas
SWMU 5.	Steel Coil Yard
SWMU 32.	Waste Oil Tank
SWMU 39.	Waste Pickle Liquor Sump and Pipes
SWMUs 40 and 41.	Waste Pickle Liquor Tanks
SWMU 44.	Waste Pickle Liquor Loading Tank
SWMU 45.	Effluent Lagoon
SWMU 47.	Former Sludge Drying Beds
SWMU 48.	Sludge Landfill
SWMU 50.	Former Sludge Spreading Area
SWMU 51.	Kaplan Waste Oil Drum Area
SWMU 52.	Kaplan Burn Area

AOC E	Kaplan Gasoline UST
AOC F	Kaplan Diesel Fuel UST
AOC G	Kaplan Facility Yard

Due to inaccessibility during the VSI, the release potential to soils could not be evaluated for the following units:

SWMU 19.	Carwash Grease Traps
SWMU 20.	Industrial Sewer System
SWMUs 24 thru 29.	Industrial Wastewater Treatment Units
SWMU 46.	Former Sludge Lagoon

TABLE 2-2 - GEOLOGIC STRATA

LTV Steel Company
Hennepin, Illinois

<u>Unit Age and Name</u>	<u>Brief Description</u>	<u>Approx. Depth Below Ground Surface (Ft)</u>	<u>Approx. Thickness (Ft)</u>
Quaternary Pleistocene Glacial Deposits	Unconsolidated sediments ranging from boulders to clay.	0 - 175	175
Pennsylvanian System	Surface was modified by glaciation. Contains various lithologies including sandstone, siltstone, shale, limestone, coal and clay.	175 - 385	210
Silurian-Devonian (Hunton Megagroup)	Dominantly siliceous limestone, dolomite and chert.	385 - 930	545
Late Ordovician Maquoketa Shale Group	Unconformably overlies the Galena-Platteville Group. Consists of the basal, Scales Shale Formation, the middle Ft. Atkinson Limestone and the upper Brainard Shale units. Acts as a confining layer for underlying groundwater.	930 - 1,108	178
Ordovician Galena-Platteville Group	Platteville Group contains vuggy dolomite and fine grained limestone strata. Galena Group contains shales, limestones and dolomites.	1,108 - 1,474	366
Ordovician Glenwood-St. Peter Formations (Ansell Group)	St. Peter is weakly cemented, fine to medium grained quartz sandstone. Glenwood is poorly sorted sandstone, impure dolomite and shale.	1,474 - 1,592	118

TABLE 2-2 - GEOLOGIC STRATA
(Continued)
LTV Steel Company
Hennepin, Illinois

<u>Unit Age and Name</u>	<u>Brief Description</u>	<u>Approx. Depth Below Ground Surface (Ft)</u>	<u>Approx. Thickness (Ft)</u>
Ordovician Prairie du Chien Group	Consists of four formations of cherty dolomite and interbedded sandstone.	1,592 - 2,127	535
Cambrian Eminence and Potosi Dolomites	The basal Patosi is finely crystalline, pure to slightly argillaceous. Eminence is sandy fine to medium grained with chert and interbedded sandstone.	2,127 - 2,380	253
Cambrian Franconia Formation	Argillaceous sandstone and silty, sandy dolomite. Contains shale beds.	2,380 - 2,535	155
Cambrian Ironton- Galesville Sandstone	Galesville is fine grained, friable sandstone. Ironton is relatively coarse grained sandstone.	2,535 - 2,705	170
Cambrian Eau Claire Formation	Contains shale, dolomite, shaley dolomite and sandstone. Shales and dolomites act as an upper confining layer for the Elmhurst-Mt. Simon Sandstone.	2,705 - 2,900	195
Cambrian Elmhurst- Mt. Simon Sandstones	Mt. Simon is basal formation that is 1,734 feet thick at site. Consists of fine to coarse grained, partly pebbly, friable sandstone. Overlies Precambrian rock and may be absent in areas of south and southwest Illinois. Elmhurst is fine to medium grained, fossiliferous and contains interbedded shale.	2,900 - 4,843	1,943

TABLE 2-2 - GEOLOGIC STRATA
(Continued)

LTV Steel Company
Hennepin, Illinois

<u>Unit Age and Name</u>	<u>Brief Description</u>	<u>Approx. Depth Below Ground Surface (Ft)</u>	<u>Approx. Thickness (Ft)</u>
Precambrian Granite	Nonconformable base upon which all sedimentary strata were deposited. Ranges in depth from 1,500 feet in northwest Illinois to 14,000 feet in southern Illinois. Substantial local relief of the surface occurs. Oldest unit in the sequence.	4,843+	Unknown

(Ref. 34)

Generalized Stratigraphy

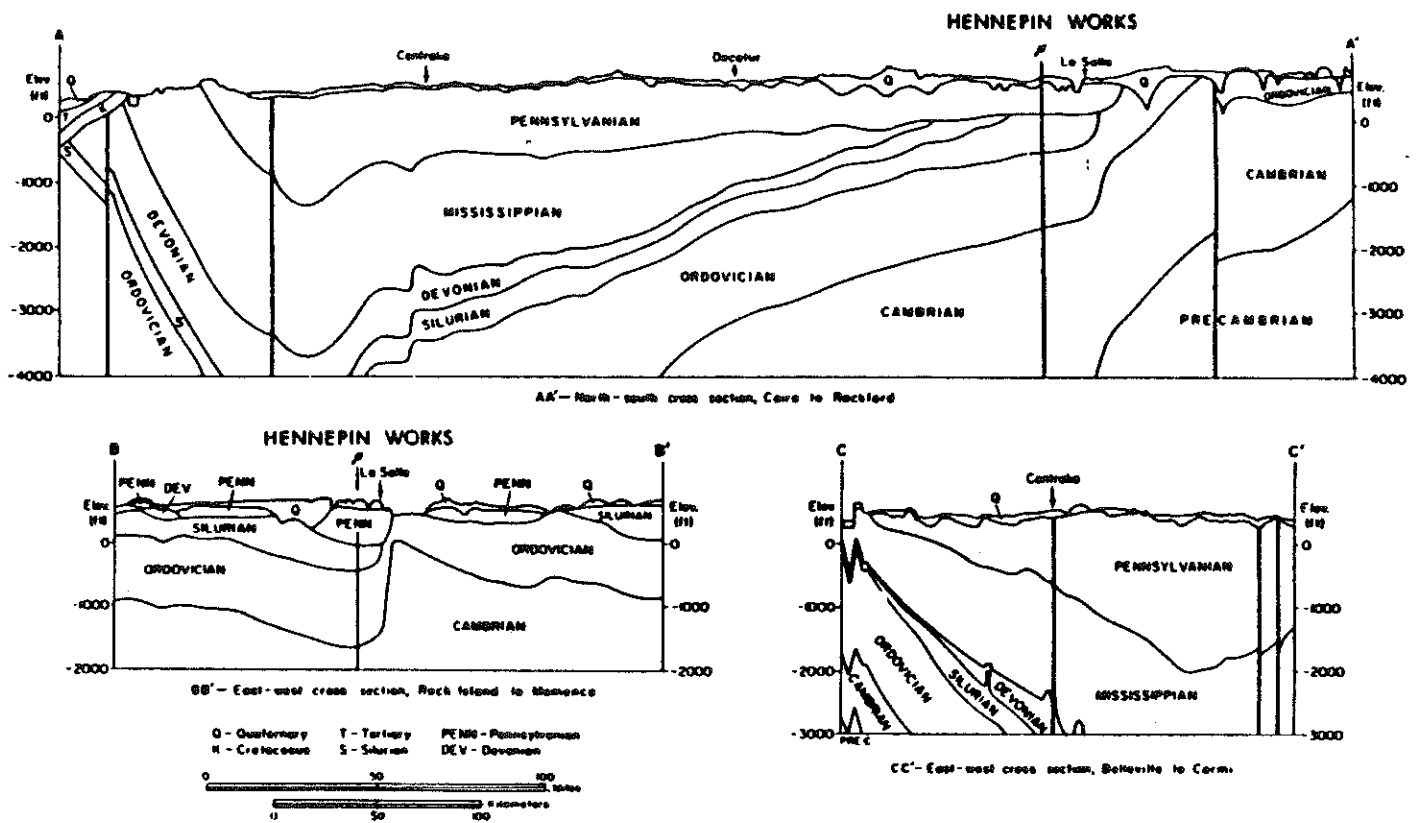
■ LTV Steel Company • Hennepin, Illinois

SYSTEM	GROUP OR SERIES	FORMATION	THICKNESS	LITHOLOGY
Pleistocene	Glacial Drift		0 - 350	
Pennsylvanian	McLeansboro		200 - 300	
	Carbondale			
	Tradewater			
Silurian	Niagaran	Port Byron	400 - 600	
		Racine		
		Waukesha		
		Joliet		
	Alexandrian	Kankakee	50	
		Edgewood		
Ordovician	Maquoketa	Brainard	180	
		Ft. Atkinson		
		Scales		
	Galena	Wise Lake	200	
		Dunleith		
		Guttenberg		
	Platteville	Natchusa	180	
		Grand Detour		
		Mifflin		
	Ance11	Pecatonica	120	
		Glenwood		
		St. Peter		
	Prairie du Chien	Shakopee	600	
		New Richmond		
		Oneota		
		Gunter		
Cambrian	Knox (Croxian)	Potosi (Trempealeau)	100	
	Croxian	Franconia	70	
		Ironton	250	
		Galesville		
		Eau Claire	400	
		Mt. Simon	1500 - 1700	
Pre-Cambrian	Basement Complex			

(Reference 34)

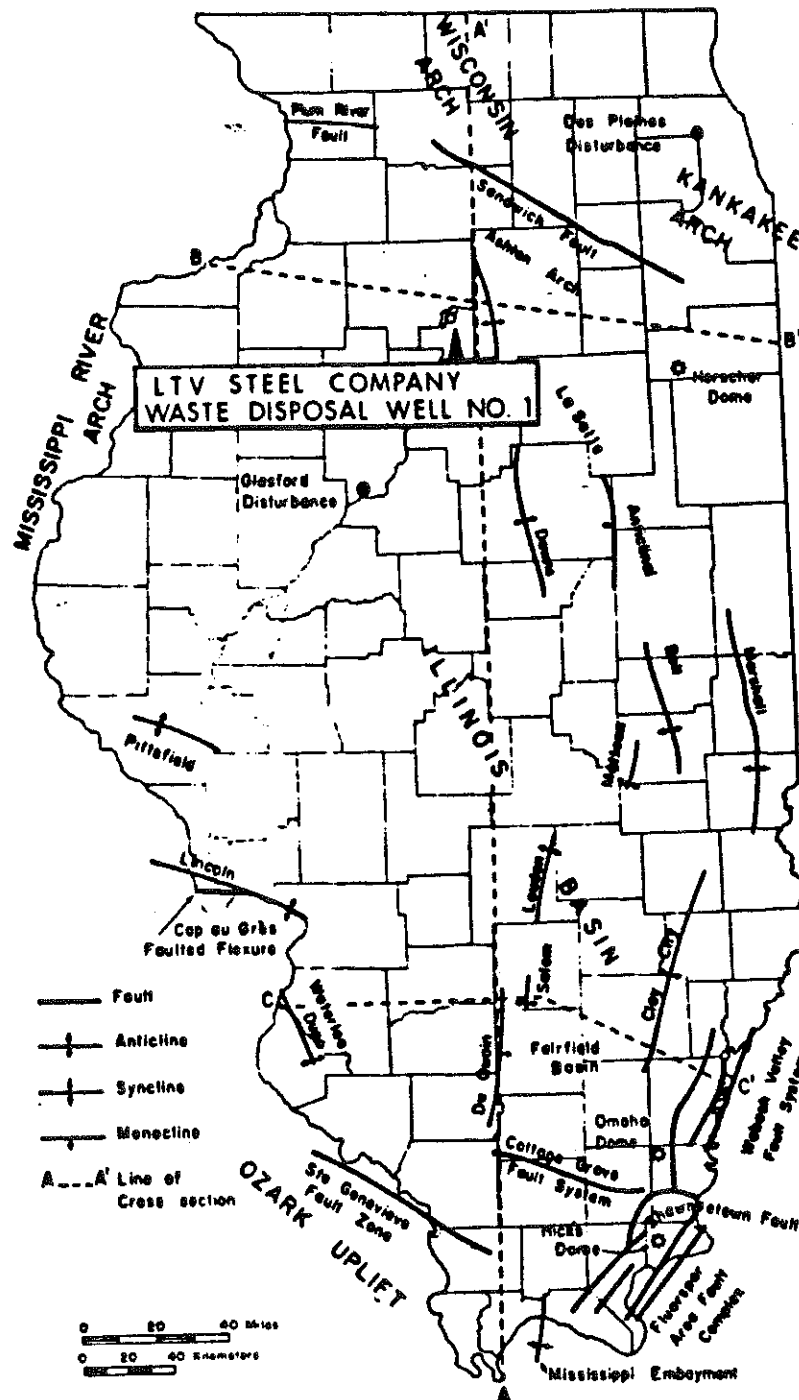
Regional Geologic Cross Sections

■ LTV Steel Company • Hennepin, Illinois



Plan View For Geologic Cross Sections

■ LTV Steel Company • Hennepin, Illinois



D. Groundwater

Groundwater in the vicinity of the LTV Steel Company, Hennepin Works, consists of a shallow water table system and several deep bedrock systems. The two major aquifer systems consist of the Quaternary glacial deposits and the underlying Pennsylvanian bedrock system. The glacial deposits at the plant site are approximately 175 feet thick and are capable of yielding large volumes of good quality water. The shallow glacial aquifers receive recharge primarily from precipitation. One of the six soil borings provided by the facility encountered groundwater near a depth of 50 feet (approximate elevation 510). The remaining borings were dry to their termination depths near elevation 490 (Refs. 34, 62). The Pennsylvanian aquifer system is generally utilized when the glacial system does not provide adequate volumes. Groundwater in this system occurs under leaky artesian conditions caused by interconnected pores, fractures, joints and bedding planes. Limestone and sandstone formations in this system comprise the best aquifers. Water quality varies considerably in the Pennsylvanian system, and most wells are completed at depths of less than 550 feet (Ref. 34).

Several other, deeper bedrock units could also be utilized for sources of drinking water in the Hennepin area. These include the Galena-Platteville group, Glenwood-St. Peter formations, Prairie du Chien group, and Eminence Potosi dolomites. The Maquoketa shale, Franconia formation, Ironston-Galesville sandstone, Eau Claire formation, Elmhurst-Mt. Simon sandstone and Precambrian granite do not have suitable groundwater quality for use in Putnam County. The Elmhurst-Mt. Simon sandstone is used as the disposal formation for the underground injection well at the LTV Steel Company, Hennepin Works (Ref. 34).

The following units have been determined to have a moderate to high release potential to groundwater at this facility:

SWMUs 3 and 4.	Railroad Container Storage Area
SWMU 5.	Steel Coil Yard
SWMU 32.	Waste Oil Tank
SWMUs 40 and 41.	Waste Pickle Liquor Tanks
SWMU 43.	Underground Injection Well
SWMU 45.	Effluent Lagoon
SWMU 47.	Former Sludge Drying Beds
SWMU 48.	Sludge Landfill
SWMU 51.	Kaplan Waste Oil Drum Area
SWMU 52.	Kaplan Burn Area

AOC A Underground Storage Tanks (USTs) at Maintenance Garage (3)
 AOC B Diesel Fuel UST
 AOC C Electrical Transformer Area
 AOC D Above-ground Farm Fuel Tanks
 AOC E Kaplan Gasoline UST
 AOC F Kaplan Diesel Fuel UST
 AOC G Kaplan Facility Yard

Due to inaccessibility at the time of the VSI, the release potential to groundwater could not be evaluated for the following SWMUs:

SWMU 19. Carwash Grease Traps
 SWMU 20. Industrial Sewer System
 SWMUs 24-31. Industrial Wastewater Treatment Units
 SWMU 39. Waste Pickle Liquor Sump and Pipes
 SWMU 46. Former Sludge Lagoon

E. Receptors

The LTV Steel Company plant is located in Putnam County immediately northeast of Hennepin, Illinois (see Figures 1 and 2). This town has a population of approximately 700. The small towns of Florid, Mark, and Granville are located within one to two miles southeast and east of the LTV property boundary. These towns have populations ranging from approximately 200 to 400 residents. Putnam County has a population of about 6,100. Depue has a population of approximately 1,900 and is located in Bureau County, one to two miles north of the property across the Illinois River (Refs. 33, 54, 60, 61).

The majority of the LTV property and surrounding land consists of cultivated fields with scattered woodlands. These areas are sparsely populated (Ref. 33).

The Illinois River flows within one mile of the western and northern property boundaries of LTV Steel Company, and also forms portions of these property boundaries (see Figure 2). The Donnelly State Wildlife Area is located northwest of the site between LTV Steel Company property and the Illinois River. An Illinois Power Company generating facility exists to the north of the north-central portion of LTV property. The Illinois Power Company facility borders the Illinois River (Refs. 33, 54).

A portion of Coleman Lake is situated on the western portion of LTV property near the Illinois River. Lyons Lake is located entirely on LTV property near its northeast corner. Turner Lake is present within approximately one-half mile of the northeast property corner. All three lakes are located within short distances of the Illinois River. Allforks Creek cross the east-central and northeast portion of the LTV site. Coffee Creek enters the extreme south-central portion of the LTV property. Both creeks drain to the Illinois River. Lowlands and wetlands occur at various locations adjacent to all surface water bodies in the vicinity of the plant. These features are shown on Figure 2 (Ref. 33).

Prevailing winds vary from northerly and northwesterly directions during late fall through early spring. Southerly and westerly winds are common during late spring through early fall (Ref. 32).

3.0 DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS

This section presents detailed descriptions of each solid waste management unit identified during the PR and VSI. These descriptions encompass unit descriptions, dates of operation, wastes managed, release controls, history of releases, and release potential to soil/groundwater, surface water and air, in addition to the potential to generate subsurface gas.

Unit Number: 1

Unit Name: Wood and Packaging Wastes Trench (Photograph 1-1)

Unit Location: The unit is located east of the Steel Coil Yard (SWMU 5) and northeast of the main plant.

Unit Description: The non-RCRA regulated, 75 foot by 150 foot by 15 foot (deep) earthen trench was constructed in the side of a hill. Well-vegetated sandy soils were present in the unit's sides and base (Ref. 40).

Period of Operation: The trench operated from 1980 until 1982 (Ref. 40).

Wastes Managed: The unit was used as a temporary storage area for wood and packaging wastes. The non-hazardous solid waste was routinely excavated and transported to a sanitary landfill for disposal (Ref. 40).

Release Controls: There are no documented release controls for this unit.

History of Releases: There was no documented release from this unit in the file materials reviewed. The unit appeared to be well-vegetated with no wastes remaining on the day of the VSI.

Conclusions:

Soil/Groundwater: The ongoing potential for releases to soil and groundwater is low. Wastes have not been stored in this unit since 1982 and, based on the VSI, no wastes remain. The past potential for releases was low. The facility reported that only small quantities of wood and packaging wastes were stored in this unit.

Surface Water: The past and ongoing potential for release to surface water is low because the unit is a trench approximately 15 feet deep and because of the relative distance to surface waters.

Air: The past and ongoing potential for releases to air is low. Solid wastes are the only wastes which were reported to have been stored in this unit.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. Solid wastes were reported as the only wastes to have been stored in this unit.

Unit Number: 2

Unit Name: Metal Waste Trench (Photograph 1-2)

Unit Location: The unit is located east of the Steel Coil Yard (SWMU 5), northeast of the Steel Plant, immediately west of the Wood and Packaging Wastes Trench (SWMU No. 1).

Unit Description: The non-RCRA regulated, 75 foot by 150 foot by 15 foot (deep) earthen trench was developed in the side of a hill. Sparsely vegetated, sandy soils comprise the unit's sides and base (Ref. 40).

Period of Operation: The trench operated from 1980 until 1982 (Ref. 40).

Wastes Managed: The unit was used as a temporary storage area for scrap metal waste. The non-hazardous solid waste, consisting predominantly of steel scrap, was routinely transported to a recycler or sanitary landfill (Ref. 40).

Release Controls: There are no documented release controls for this unit.

History of Releases: There was no documented release from this unit in the file materials reviewed. However, during the VSI, apparent oil stains and a compacted steel drum were observed at the trench base (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low to moderate. The facility reported that only scrap metal was stored in this unit; however, minor soil staining was observed. Therefore, if any oils, wastewaters, or products used at the facility were inadvertently stored in this unit, there would be a direct pathway for releases to the soils and underlying groundwater.

Surface Water: The past and ongoing potential for releases to surface water is low because the unit is a trench approximately 15 feet deep and because of the relative distance to surface waters.

Air: The past and ongoing potential for releases to air is low. Solid wastes are the only wastes which were reported to have been stored in this unit, and only minor soil stains were observed.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low to moderate. Solid wastes were reported as the only wastes to have been stored in this unit, but oily stains were observed on the soil in the base of the unit.

Unit Numbers: 3 and 4

Unit Name: Railroad Container Storage Areas (Unit 4 - Photograph 1-3)

Unit Location: Both units are located off the rail spur near the northeast corner of the Steel Plant's gravel-surfaced yard.

Unit Description: The two areas are non-RCRA regulated units. Unit 3 is an approximately 10 to 20 square foot area, just east of the rail spur. One open 5-gallon pail containing an oil-like substance was observed during the VSI in this area. Unit 4 is an approximately 100 to 200 square foot area just west of the rail spur. Nine 30- and 55-gallon drums and ten open 5-gallon pails were located at this unit. The containers were empty to partially full and contained various lubrication oils for railroad switches. Oils and apparent rain water appeared to be overflowing from some of the pails. Both units consist of flat gravel surfaced areas (Ref. 40).

Period of Operation: The units have operated since 1967 and are still active with no anticipated closure date (Ref. 40).

Wastes Managed: According to facility representatives, non-hazardous, petroleum-based lubricating oils are used for switches on the tracks. LTV handles rail spur maintenance. Oils are the only materials managed at these units (Ref. 40).

Release Controls: There are no release controls for these units.

History of Releases: There are no documented releases from these units in the file materials. However, soil stains were observed around the containers, most of which were open (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is moderate to high. Stains observed on the day of the VSI indicate releases have already occurred. There are no release controls, and therefore, releases can migrate into the permeable underlying soils and possibly reach the groundwater.

Surface Water: The past and ongoing potential for releases to surface water is low because the nearest waterway is the Illinois River which is located approximately 1/2 mile west of this unit.

Air: The past and ongoing potential for releases to air is low to moderate. Although the containers are open, the oil is relatively non-volatile.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is moderate because the waste oil is an organic material that may generate gases.

Unit Number: 5

Unit Name: Steel Coil Yard (Photographs 1-7 and 1-17)

Unit Location: The unit is located outdoors directly east of the Steel Plant.

Unit Description: The non-RCRA regulated, 2,633 foot by 250 foot graveled, outdoor area is where incoming steel coils are staged prior to processing operations. The steel coils are off-loaded from the rail spur which is in the eastern portion of the Yard (Ref. 40).

Period of Operation: The unit has operated from 1967 and is presently active.

Wastes Managed: Between 1968 and 1983, the facility spread reportedly non-hazardous waste oil over the Steel Coil Yard to suppress the dust generated from the graveled area. The waste oil was a mixture of petroleum, animal and vegetable oils obtained from the Waste Oil Tank (SWMU 32). An analysis of the waste oil is presented in Attachment A, and indicates that this waste contains hazardous constituents (Refs. 40, 41).

Release Controls: There are no release controls documented or observed for this unit.

History of Releases: There was no documented release from this unit in the file materials. However, the spreading of oil over the gravel constitutes a release to the soils.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is moderate to high. The facility intermittently spread waste oil onto the graveled yard between 1968 and 1983. The residual oil could potentially migrate farther into the underlying soils and to the groundwater.

Surface Water: The past potential for releases to surface water is low to moderate. Since the facility spread the waste oil onto the ground surface, heavy rains could potentially carry the oil into the Storm Sewer System (SWMU 53) which discharges into the Illinois River. The ongoing potential for release is low because LTV no longer conducts this practice.

Air: The past potential for releases to air is low to moderate. The waste oil is relatively non-volatile; however, during hot weather the oil might have volatilized into the air. The ongoing potential for releases is low because the facility no longer conducts this practice.

Subsurface Gas: The past potential for generation of subsurface gas is moderate. Because the waste oil is an organic, it could potentially generate gas in soils underlying the surface. The ongoing potential for generation of subsurface gas is low to moderate. Residual oils could potentially continue to generate subsurface gas.

Unit Number: 6

Unit Name: Bulk Oil Sump (Photograph 1-16)

Unit Location: The unit is located immediately east of the southeast corner of the Bulk Oil Building.

Unit Description: The non-RCRA regulated Bulk Oil Sump is an approximately 3 feet by 4 feet by 1 foot deep, concrete sump. The unit is located under the inlet valves located at the southeast corner of the Bulk Oil Building. The sump is used to collect spills or leakage that occur during unloading of tanker trucks. The leakage flows by gravity to another sump in the basement and eventually into the Industrial Sewer System (SWMU 20) (Ref. 40)

Period of Operation: The unit has operated since 1967 and is still active (Ref. 40).

Wastes Managed: The Bulk Oil Sump manages non-hazardous vegetable oil used in processing steel (Ref. 40).

Release Controls: The unit's release controls consist of an asphalt pavement and building wall, the basement walls and floor, and the Industrial Sewer System (SWMU 20) (Ref. 40).

History of Releases: There were no documented releases from this unit in the file materials reviewed. However, during the VSI, stains on the asphalt around the sump area were observed (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low due to the small quantity of released, non-hazardous oils that could migrate through the crack between the sump and asphalt pavement.

Surface Water: The past and ongoing potential for releases to surface water is low. This is due to the relatively small amount of released material which could reach the Storm Sewer Systems (SWMU 53) and eventually the Illinois River.

Air: The past and ongoing potential for releases to air is low based upon the oil being a relatively non-volatile organic waste.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. The released oils that may have migrated to the soils through the crack between the sump and asphalt pavement are of a small quantity.

Unit Number: 7

Unit Name: Product Drum Storage Area (Photograph 1-17)

Unit Location: The unit is located southwest of the Bulk Oil Building and southeast of the Steel Plant.

Unit Description: The approximately 20 foot by 70 foot, asphalt pavement area is a non-RCRA regulated drum storage area. The majority of the drums are stored on their sides directly on the asphalt pavement. Some drums are placed on pallets (Ref. 40).

Period of Operation: The unit has operated since 1967 and is presently active (Ref. 40).

Wastes Managed: The products stored include lubricating oils, caustic soda, and a tar-like substance. The unknown tar-like substance has stained the asphalt pavement (Ref. 40).

Release Controls: A gravel berm, approximately 6 inches in height, is located along the western side of the storage area (Ref. 40). No other release controls are known or documented for this unit.

History of Releases: These were no documented releases from this unit in the file materials reviewed. However, heavy "tarry" stains were observed on the asphalt, along with black oily stains. There was no evidence of stains beyond the blacktop. Some minor cracking in the asphalt pavement was also noticed (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low. Although "tarry" and oily stains were observed on the asphalt where minor asphalt cracking was observed, the waste is of a small quantity.

Surface Water: The past and ongoing potential for releases to surface water is low. Although heavy "tarry" stains and black oily stains were observed, the waste is of a small quantity.

Air: The past and ongoing potential for releases to air is low to moderate. The "tarry" and oil-like stains are both organics which may volatilize.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low to moderate because organic material was observed on the pavement which could migrate through the existing cracks in the asphalt.

Unit Number: 8

Unit Name: Waste Pickle Liquor Holding Tank (Photograph 1-6)

Unit Location: The unit is located east of the central section of the pickle line, which runs north to south in the eastern portion of the Steel Plant.

Unit Description: The 30,000 gallon capacity, RCRA-regulated, acid brick and rubber-lined steel, covered tank is used to temporarily store waste pickle liquor prior to transfer into the Waste Pickle Liquor Sump and Pipes (SWMU 39) (Refs. 40, 48).

Period of Operation: The unit has operated from 1967 and is presently active (Ref. 40).

Wastes Managed: The unit manages waste pickle liquor, EPA Hazardous Waste Number K062, prior to release into the Waste Pickle Liquor Sump and Pipes (SWMU 39). The waste contains hydrochloric acid typically at 2 to 3 percent concentration and ferric chloride at 20 percent concentration. The waste is transferred through the Waste Pickle Liquor Sump and Pipes to the Waste Pickle Liquor Tanks (SWMUs 40 and 41) where it is stored. Final disposal involves injection into the Underground Injection Well (SWMU 43) (Ref. 40).

Release Controls: The unit is located in an enclosed building and above a concrete floor slab. The floor slab slopes to a sump located beneath the pickle line; this sump discharges into the Waste Pickle Liquor Sump and Pipes (SWMU 39). The tank is covered and gases are vented through the Pickle Line Fume Scrubber (SWMU 9). An overfill alarm is also provided on the unit (Ref. 40).

History of Releases: These were no documented releases from this unit in the file materials reviewed or observed during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low. The unit is located in an enclosed building and over a concrete floor slab.

Surface Water: The past and ongoing potential for releases to surface water is low. The unit is located indoors over a concrete floor slab.

Air: The past and ongoing potential for releases to air is low. The unit is covered and has a vacuum vent that leads to the Pickle Line Fume Scrubber (SWMU 9).

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. The unit is located indoors over a concrete slab, and has no documented history of releases.

Unit Number: 9

Unit Name: Pickle Line Fume Scrubber (Photograph 1-7)

Unit Location: The unit is located indoors along the east side of the Steel Plant. The stack is outdoors along side of the building.

Unit Description: The non-RCRA regulated unit operates as an enclosed water-cascade scrubber. The unit is IEPA APC permitted. The unit's wastewater is channeled into the Waste Pickle Liquor Sump and Pipes (SWMU 39) and is disposed of through the underground Injection Well (SWMU 43). Exhaust gases are vented through a steel stack (Ref. 40).

Period of Operation: The unit has operated since 1967 and is presently active (Ref. 40).

Wastes Managed: The scrubber removes hydrochloric acid gases from the air, subsequently releasing the rinsed air through the stack. The hydrochloric acid gases are produced from the pickle line operating and holding tanks. The wastewater is channeled into the Waste Pickle Liquor Sump and Pipes (SWMU 39) (Ref. 40).

Release Controls: The unit has overflow monitoring alarms. The enclosed unit is located within the Steel Plant on a concrete slab with 6 inch concrete curbing along the perimeter of the plant. In addition, the plant has steel walls and roofs. The unit empties into the pickle line's Waste Pickle Liquor Sump and Pipes (SWMU 39). The Steel Plant and the pickle line drain are the release controls for this unit. The stack air is monitored through the IEPA APC permit (Ref. 40).

History of Releases: There were no documented hazardous releases from this unit in the file materials reviewed. The unit has been permitted and monitored for air emissions since it began operating, and has remained in compliance. On the day of the VSI, two side doors adjacent to the scrubber were open and a barely visible emission to the air from the stack was observed. However, because the stack emission from the scrubber is water-saturated, the air emission is expected to be visible (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases from this unit is low. The unit is enclosed and located indoors above a concrete slab. The unit discharges into the Waste Pickle Sump and Pipes (SWMU 39).

Surface Water: The past and ongoing potential for releases from this unit is low because the unit is located inside a building and is approximately 1/2 mile from surface waters.

Air: Releases to air are regulated under IEPA APC. The past and ongoing potential for unregulated releases from this unit is low because the monitored unit has remained in compliance with its permit throughout its operation.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low because the unit is located above a concrete slab and the managed wastes are inorganic.

Unit Number: 10

Unit Name: Oil Mist Eliminator (Photograph 1-9)

Unit Location: The unit is located at the south end of the tandem mill area.

Unit Description: The unit is a cyclone separator, centrifugation system. The unit is IEPA APC permitted. The unit removes the rolling oils from the air exhaust, subsequently emptying the oily wastewater into the Industrial Sewer System (SWMU 20) for treatment at the Industrial Treatment Plant (Ref. 40).

Period of Operation: The unit has operated since 1967 and is presently active (Ref. 40).

Wastes Managed: The unit manages oily air and wastewater generated from the tandem mill rolling operation. The oil is a soluble non-hazardous, animal or vegetable oil (Ref. 40).

Release Controls: The unit is equipped with overfill alarms, and is located indoors over a concrete floor slab. The unit is also monitored through the IEPA APC Permit.

History of Releases: There were no documented hazardous releases from this unit in the file materials reviewed. The unit has remained in compliance with its permit conditions, and releases emissions to the air on a routine basis. Evidence of release was not observed during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for release to soil and groundwater is low. The unit is enclosed and is located indoors above a concrete floor slab.

Surface Water: The past and ongoing potential for releases to surface water is low because the unit is located indoors approximately 1/2 mile from surface waters.

Air: Releases to air are regulated under IEPA APC Permit. The past and ongoing potential for unregulated releases to air is low because the unit has remained in compliance with its permit conditions.

Subsurface Gas: The past and ongoing potential for subsurface gas generation is low because the unit is located indoors above a concrete floor slab.

Unit Number: 11

Unit Name: Hydrochloric Acid Product Tanks (Photograph 1-10)

Unit Location: The unit is located outdoors along a rail spur and adjacent to the west side of the Steel Plant's pickle line.

Unit Description: This non-RCRA regulated unit is comprised of two rubber-lined steel tanks located approximately 25 feet above ground. This unit is classified as a SWMU due to systematic releases from the tanks. Each tank has a 20,000 gallon capacity. The unit stores hydrochloric acid used in the pickle line. Approximately 2.3 million gallons of acid are delivered by rail car each year (Refs. 40 and 48).

Period of Operation: The unit has operated since 1967 and is presently active (Refs. 40 and 48).

Wastes Managed: Observations indicate that the unit has systematically released hydrochloric acid product during receiving operations. Rust-colored stains were observed throughout the graveled area that underlies the two tanks and adjacent railroad tracks (Ref. 40).

Release Controls: The unit is underlain by approximately 10 feet of limestone gravel to act as a neutralizing agent. The tanks also have high-level alarms to prevent overfilling (Ref. 48).

History of Releases: On June 15, 1983, a release of less than 1,000 gallons of hydrochloric acid occurred. The spill was neutralized with lime and was only reported to have impacted the graveled area below the tanks (Ref. 47). The unit, as observed on the day of the VSI, appears to systematically release hydrochloric acid product onto the underlying graveled area (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low to moderate because the documented and systematic releases could eventually migrate to the underlying soils and groundwater.

Surface Water: The past and ongoing potential for releases to surface water is low due to the relative distance to surface waters.

Air: The past and ongoing potential for releases to air is low to moderate. During normal operations a release to air is possible due to the volatile nature of the acid.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low because of the relatively small quantities released and inorganic nature of the waste.

Unit Numbers: 12-14

Unit Name: Empty Drum Storage Areas (Photograph 1-8, SWMU 12)

Unit Location: The units are located in three areas. Unit 12 is located at the south end of Steel Plant between the pickle line and tandem mill. Unit 13 is located near an aisleway southwest of the slitting line and west of a coil storage area within the Steel Plant. Unit 14 is located in an outdoor area adjacent to the north side of the Steel Plant tandem mill.

Unit Description: Units 12 and 13, located indoors, consist of 20 to 50 empty, open and closed drums. One drum at unit 12 had a label indicating flammable contents; however, the drum was empty. Unit 14, located outdoors, consists of approximately 15 empty, closed drums. These units are temporary storage areas for empty drums that are sent off-site for disposal or reclamation. The units are non-RCRA regulated (Ref. 40).

Period of Operation: The units have been in operation since 1967 and are presently active (Ref. 40).

Wastes Managed: The units manage empty drums that may contain residues of products used. Typical products include lubricating, hydraulic, and vegetable oils, in addition to solvents and caustic soda (Ref. 40).

Release Controls: The two indoor units have secondary containment consisting of a 6-inch cement curbing along the perimeter of the building, a concrete floor slab, and the steel walls and roof. In addition, the Industrial Sewer System (SWMU 20) is also a secondary containment measure for units 12 and 13. Unit 14, located outdoors, has gravel underlying it. There is no release control for this unit (Ref. 40).

History of Releases: There were no documented releases from these units in the file materials reviewed. Oily stains were observed on the floor slab at Unit 12. Releases were not observed at the other two units during the VSI (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low based upon the secondary containment provided for the indoor units, the empty condition of the drums, and the absence of evidence of a release at the outdoor unit.

Surface Water: The past and ongoing potential for releases to surface water is low. Two units are located indoors. The unit located outdoors, SWMU 14, is approximately 1/2 mile east of the nearest waterway.

Air: The past and ongoing potential for releases to air is low because the drums are empty and most are closed.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. Two units are located indoors with secondary containment and the units store empty drums.

Unit Number: 15

Unit Name: Shot Blaster Drum Storage Area (Photograph 1-11)

Unit Location: The unit is located near the northwest corner of the Steel Plant tandem mill and south of the Shot Blaster.

Unit Description: Approximately 11 open drums containing used shot blast are stored on individual drum pallets in this non-RCRA regulated unit. The shot blast waste is a by-product from blasting the steel rollers used in the tandem and temper mills. The shot blast waste is sent back to the manufacturer for recycling (Ref. 40).

Period of Operation: The unit has operated since 1967 and is presently active (Ref. 40).

Wastes Managed: The unit manages used shot blast (hardened steel shot) and the metal removed from the mill rolls during blasting. The waste is removed from the blasting area and staged in the drums until they are periodically shipped off-site to the manufacturer for recycling (Ref. 40).

Release Controls: The unit is located in an enclosed building with a concrete floor, 6 inch concrete curbing, and the Industrial Sewer System (SWMU 20) drains for secondary containment (Ref. 40).

History of Releases: There were no documented releases from this unit in the file materials reviewed. Small piles of shot blaster waste were observed on the floor adjacent to the drums during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low. The unit is located indoors on pallets with the Steel Plant's curbing, floor slab and Industrial Sewer System (SWMU 20) drains for secondary containment.

Surface Water: The past and ongoing potential for releases to surface water is low. The unit is located indoors with secondary containment.

Air: The past and ongoing potential for releases to air is low based upon the solid, non-volatile nature of the waste.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. There was no evidence of a release to soils and the unit is located indoors.

Unit Number: 16

Unit Name: Bag House Drum Storage Area (Photograph 1-12)

Unit Location: The unit is located outdoors along the north side of the Steel Plant's shot blaster area.

Unit Description: This non-RCRA regulated unit is comprised of approximately 12 intact salvage drums (85 gallon capacities) used to temporarily store waste from the Shot Blaster Bag House (SWMU 17). The waste is generated during roll finishing operations. The drums, empty on the day of the VSI, are staged on pallets that are situated above asphalt. The waste is routinely collected by the manufacturer, who recycles the material (Refs. 40, 48).

Period of Operation: The unit has operated since 1967 and is presently active (Ref. 40).

Wastes Managed: The drums are used to temporarily store shot blaster waste that is filtered in the bag house. The waste consists of dust from the hardened steel shot and metal removed from the rolls and may contain trace amounts of heavy metals. This is periodically collected by the manufacturer for recycling (Ref. 40).

Release Controls: The unit is located above asphalt pavement and the drums have closed lids (Ref. 40).

History of Releases: There were no documented releases from this unit in the file materials reviewed. However, on the day of the VSI, apparent shot blaster waste dust was observed on the asphalt. This material was up to approximately 1/2 inch thick and covered an area of approximately 8 feet by 12 feet. The material formed a "cake" on the pavement, which was possibly caused by precipitation (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low to moderate because the apparent released material could be washed through cracks in the asphalt or transported off the pavement by precipitation.

Surface Water: The past and ongoing potential for releases to surface water is low due to the relative distance to surface waters.

Air: The past and ongoing potential for release to air is low to moderate. The drums are closed, but apparent releases were observed on the asphalt. The waste may migrate through wind blown releases.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low based upon the inorganic nature of the waste.

Unit Number: 17

Unit Name: Shot Blaster Bag House (Photograph 1-12)

Unit Location: The unit is located outdoors along the north side of the Steel Plant's shot blaster area.

Unit Description: This non-RCRA regulated unit consists of a steel bag house that filters out the shot blaster dust generated during roll finishing operations. The unit uses exhaust fans to vent air from the shot blaster area and filters out the dust using cloth filter media. The dust is emptied through the bottom of the unit directly into 85 gallon salvage drums. This is done about once per year and the filters are changed every 3 to 4 years. A placard at the bag house states "Highly Combustible/Explosive Dust" (Refs. 40, 48).

Period of Operation: The unit has been operating since 1967 and is presently active (Refs. 40, 48).

Wastes Managed: The unit manages shot blaster waste dust which consists of steel shot fragments and metal removed from the rolls. The waste dust and discarded filters are placed into the salvage drums. The drums are removed immediately for recycling by the manufacturer or temporarily stored at the Bag House Drum Storage Area (SWMU 16) prior to removal. Approximately 8 to 10 drums of waste are produced each year (Refs. 40, 48).

Release Controls: The unit is located above a small concrete slab (Ref. 40). There are no other known release controls for this unit.

History of Releases: There were no documented releases from this unit in the file materials reviewed. However, it was reported that two fires have occurred in the baghouse due to exhaust fan failures (Refs. 40, 48).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low based on the construction and operation of the unit, and the absence of released materials immediately around the baghouse.

Surface Water: The past and ongoing potential for releases to surface water is low based on the relative distance to surface waters.

Air: The past and ongoing potential for releases to air is low to moderate because some dust may bypass the filters during operation or escape during emptying of the unit. There is also a potential for particulate and gaseous releases during a fire.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. The shot blaster dust is an inorganic solid and would not generate gas if released.

Unit Number: 18

Unit Name: Dross Tank (Photograph 1-14)

Unit Location: The unit is located directly east of the Steel Plant galvanizing line.

Unit Description: This non-RCRA regulated unit is used to store dross, or zinc oxide. The dross is skimmed off the galvanizing line's molten zinc pot and deposited into the unit. The tank is made of cast steel, 4 to 5 inches thick, and has a capacity of approximately 25 gallons. The dross is periodically shipped off-site for reclamation (Refs. 40, 48).

Period of Operation: The unit has been in operation since 1967 and is presently active (Ref. 40).

Wastes Managed: The unit manages zinc oxide which is produced on the surface of the molten zinc tank. This material is skimmed from the surface of the molten zinc tank and temporarily stored in the tank prior to shipment off-site for reclamation (Ref. 40).

Release Controls: The unit is located indoors with the Steel Plant's curbing, floor slab, and Industrial Sewer System (SWMU 20) for secondary containment (Ref. 40).

History of Releases: There were no releases documented from this unit in the file materials reviewed or observed during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low. The unit is located indoors with secondary containment.

Surface Water: The past and ongoing potential for releases to surface water is low. The unit is located indoors with secondary containment.

Air: The past and ongoing potential for releases to air is low. The unit is located indoors and handles only non-volatile material.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low. The unit is located indoors with secondary containment.

Unit Number: 19

Unit Name: Car Wash Grease Traps (Photograph 1-15)

Unit Location: The two units are located in the east and west portions of the car wash bay at the north end of the Garage Building.

Unit Description: These two non-RCRA regulated units consist of concrete sumps approximately 4 feet in diameter by 4 feet deep, and are covered by perforated steel plates. Each unit contains a baffle to separate floating oils and greases from the wastewater generated during vehicle washing. The oil is retained in the unit and the water is discharged to the Industrial Sewer System (SWMU 20) for treatment at the Industrial Waste Treatment Facility (Ref. 40).

Period of Operation: The unit has been operating since 1967 and is presently active (Ref. 40).

Wastes Managed: The unit collects oil and grease from vehicle washing. The traps are periodically emptied by an outside contractor. The wastewater is treated at the Industrial Waste Treatment Facility (Ref. 40).

Release Controls: There are no known release controls for these units.

History of Releases: There were no documented releases from this unit in the file materials reviewed. The units were not accessible for inspection during the VSI due to the heavy cover plates.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater could not be evaluated because the units could not be inspected during the VSI.

Surface Water: The past and ongoing potential for releases to surface water is low due to the relative distance to surface waters and construction of the units.

Air: The past and ongoing potential for releases to air is low based on the nature of the wastes, and because it is covered with steel plates.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas could not be evaluated because the units could not be inspected during the VSI.

Unit Number: 20

Unit Name: Industrial Sewer System (Photograph 1-4)

Unit Location: The unit is located throughout the Steel Plant. This sewer system connects to the Industrial Treatment Facility (SWMUs 24 through 31) through underground pipes.

Unit Description: The unit operates as the wastewater collection and transfer system. The unit is channeled through all buildings and production areas within the main plant area. This sewer system has drains, sumps, and pits underlying and adjacent to equipment used for production, maintenance, storage, and handling purposes. This system is located below the floor slabs with either steel grates or plates covering it. The system operates mostly on gravity flow. The deep pits are drained to the pipes by sump pumps. The sumps and drains located in the building are constructed of concrete. The smaller diameter pipes are constructed of vitrified clay and the larger diameter pipes are constructed of concrete (Refs. 40, 48).

Period of Operation: The unit has been in operation since 1967 and is presently active (Ref. 40).

Wastes Managed: The unit manages all wastewaters except the waste pickle liquor and chromate coating wastewaters. The wastes include oils, caustics, phosphates, metals, solvents, and non-contact cooling waters. The wastewaters are all transferred to the Industrial Waste Treatment Facility (Ref. 40).

Release Controls: Should the drains or sumps overflow within the buildings, the concrete floor slabs and 6 inch cement curbing in the Steel Plant along with the steel walls and roof would act as release controls. There is no release control for the underground pipes routed to the Industrial Treatment Plant (Ref. 40).

History of Releases: There were no documented releases from this unit in the file materials reviewed. During the VSI, the drains and sumps that were visible appeared to be operating without overflows or backup; no releases were noted. However, many sumps and the underground pipes were not accessible during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for release to soil and groundwater could not be fully evaluated because of the inaccessibility of many of the unit's components.

Surface Water: The past and ongoing potential for releases to surface water is low because much of the unit is located underground and relatively far from surface waters.

Air: The past and ongoing potential for releases to air is low to moderate. The unit is located underground and/or indoors and unexposed to outdoor air.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas could not be fully evaluated because of the unit's inaccessibility of many of the unit's components.

Unit Number: 21

Unit Name: Municipal Waste Containers (Photograph 1-13)

Unit Location: These units are located throughout the LTV plant area.

Unit Description: The units are used for storing dry municipal waste. The containers include garbage cans, dumpsters and roll-offs. The roll-offs vary between approximately 5 to 20 cubic yards in capacity. The containers are located throughout the buildings and outside of the Steel Plant. The roll-offs are owned by Wozniak Sanitation, who picks up the waste weekly for disposal at a nearby sanitary landfill (Ref. 40).

Period of Operation: The units have been in operation since 1967 and are presently active (Ref. 40).

Wastes Managed: The units handle municipal non-hazardous type solid wastes. Typically, the wastes include packaging and wood materials generated in daily operations (Ref. 40).

Release Controls: The larger, 20 cubic yard roll-offs are located outdoors on asphalt. The smaller, 5 to 10 cubic yard roll-offs have lids (Ref. 40). The dumpsters, small roll-offs, and garbage cans are located indoors on concrete slabs that function as release controls.

History of Releases: There were no documented releases from these units in the file materials reviewed or observed during the VSI.

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater is low due to the types of wastes managed.

Surface Water: The past and ongoing potential for releases to surface water is low due to the types of wastes managed and distance to surface waters.

Air: There is a low past and ongoing potential for releases to the air due to the types of wastes managed. However, there is the possibility of non-hazardous, wind-blown debris when the wastes are transferred to or from these containers or when there is no lid.

Subsurface Gas: The past and ongoing potential for generation of subsurface gas is low due to the solid, non-putrescible waste managed above-ground.

Unit Numbers: 22-31

Unit Name: Industrial Treatment Plant (Photographs 1-31 and 1-32)

Unit Location: The units are located in the southwest portion of the LTV property and west of the main Steel Plant.

Unit Description: Process Summary

The units described below treat river intake water and industrial wastewaters generated at the LTV Hennepin Works. The river water and wastewater are treated in separate portions of this facility. The treated wastewater eventually discharges to the Illinois River via outfalls that are regulated under the NPDES program. This discussion includes all water treatment units at the Industrial Treatment Plant. These units include: River Water Clarifiers 1 and 2 (SWMUs 22 and 23), Primary Mixing Tanks (SWMU 24), Primary Settling Tanks (SWMU 25), Secondary Mixing Tanks (SWMU 26), Wastewater Flocculator Clarifiers Nos. 1 and 2 (SWMUs 27 and 28), Sludge Thickener (SWMU 29), Inlet Flume (SWMU 30), and Distribution Flume (SWMU 31). The units are interconnected by the distribution flume.

Units 22 and 23 - River Water Clarifiers 1 and 2

The two river clarifiers are located north of the control building at the north end of the Industrial Treatment Plant; Clarifier #1 is located to the south of Clarifier #2. Only one clarifier is in service at any time; Unit 2 was active at the time of the VSI. Each clarifier is approximately 80 feet by 80 feet by 24 feet deep at the center, and is constructed of concrete sides and bottom slab. Minor cracks were observed in the base and sides of Unit #1 which was empty during the VSI. Some of the cracks were sealed with a mastic material. Each clarifier can process

approximately 2,500 gallons per minute of river intake water. Silt and other suspended solids are allowed to settle out and are collected near the center of the unit. The bottom slab is sloped to the center, and rotating rakes also help move solids to the center. The collected sludge is then pumped to the Sludge Thickener (SWMU 29). The clarified water is pumped into a concrete reservoir to the east of the clarifiers for eventual use in the plant (Ref. 40).

Unit 24 - Primary Mixing Tanks

This unit consists of two adjacent mixing tanks which are used in series. The tanks are made of concrete sides and bottoms, and are approximately 20 feet by 20 feet by 24 feet deep. Untreated industrial wastewaters enter these tanks from the Inlet Flume (SWMU 30). The wastewater is agitated and aerated in these two tanks and then passes into the two Primary Settling Tanks (SWMU 25) (Ref. 40).

Unit 25 - Primary Settling Tanks

These units are connected to each of the two Primary Mixing Tanks and receive the aerated wastewater from them. These concrete tanks are approximately 80 feet long, 15 feet wide, and 24 feet deep. The tanks allow the oily wastes to float to the surface and suspended solids to settle to the bottom. The oils are skimmed from the surface and pumped to the Waste Oil Tank (SWMU 32) and the collected solids are pumped to the Sludge Thickener (SWMU 29). The wastewater then flows to the Secondary Mixing Tanks (SWMU 26) (Ref. 40).

Unit 26 - Secondary Mixing Tanks

These two tanks are located immediately north of the primary tanks and operate in series. Each tank is made of concrete with dimensions of 20 feet by 20 feet by 24 feet deep. The tanks are covered by metal grates. Waste pickle liquor, which contains approximately 20 percent ferric chloride and 2 to 3 percent hydrochloric acid, is added as a coagulant.

Lime is also added for pH control and the mixture is vigorously agitated by mechanical mixers. The wastewater then flows to the Wastewater Flocculator Clarifiers (SWMUs 27 and 28). A polymer flocculating agent is added to the wastewater stream in the Distribution Flume (SWMU 31) between the Secondary Mixing Tanks and Flocculator Clarifiers (Ref. 40).

Units 27 and 28 - Wastewater Flocculator Clarifiers Nos. 1 and 2

These two concrete tanks are located to the north of the secondary mixers, with Clarifier No. 1 to the north of No. 2. The units have dimensions of 80 feet by 80 feet by 20 feet deep at the side walls. The bases slope an additional 4 feet to the center of each unit. The clarifiers are connected in parallel, with one unit in service at a given time. The solids which settle out are pushed to the center by a rotating rake and pumped to the Sludge Thickener (SWMU 29). The treated effluent is then discharged to the Effluent Lagoon (SWMU 45) (Ref. 40).

Unit 29 - Sludge Thickener

The sludge thickener is a concrete tank with dimensions of 80 feet by 80 feet by 20 feet deep at the side walls, and the unit has a sloping bottom. This unit receives solids slurries from the River Water Clarifiers (SWMUs 22 and 23), Primary Settling Tanks (SWMU 25) and Wastewater Flocculating Clarifiers (SWMUs 27 and 28). Spent diatomaceous earth from the Deep Well Injection System (SWMU 42) is also added on a periodic basis. The solids are allowed to further settle in this unit. The thickened solids are currently pumped from the Sludge Thickener to the Sludge Filter System (SWMU 34). Prior to installation of this filtering system in 1974, the thickened sludge was pumped directly to the Former Sludge Lagoon (SWMU 46). The decanted wastewater from the Sludge Thickener is pumped to the Primary Mixing Tanks (SWMU 24) at the head of the treatment process (Ref. 40).

Unit 30 - Inlet Flume

This unit is located immediately east of the Primary Mixing Tanks (SWMU 24). The flume is made of concrete and covered by steel grating. This unit receives untreated wastewater from the Industrial Sewer System (SWMU 20) for routing to the Primary Mixing Tanks (SWMU 24) (Ref. 40).

Unit 31 - Distribution Flume

This concrete channel is located along the entire west side of the Wastewater Treatment Area (SWMUs 24 through 29). It ranges from approximately 3 feet wide by 2 feet deep in its northern portion, to approximately 4 feet wide by 8 feet deep near the southern end. The primary purpose of the flume is to transfer wastewaters between the treatment units. Steel gates within the flume direct the flow into and out of each treatment unit. A polymer (currently Calgon Poly EZ 2706) is added to the wastewater in this unit between the Secondary Mixing Tanks (SWMU 26) and Wastewater Flocculating Clarifiers (SWMUs 27 and 28). The entire flume is covered by steel grating. A few minor cracks were observed in the side walls of the flume (Ref. 40).

Period of Operation: The Industrial Treatment Plant described above began operation in 1967 when production began at the Hennepin Works. This treatment plant is currently operating with no proposed closure date (Ref. 40).

Wastes Managed: The Industrial Treatment Plant receives wastewaters generated by process rinsing, blowdown and maintenance from the boilers, recirculated cooling water system, pickle line, tandem mill, temper mill, galvanizing line, finishing operations, maintenance facilities, and floor drains and sumps throughout the facility. The primary waste constituents include: ferric chloride and hydrochloric acid from the pickle line; oils and greases (animal and vegetable-based coating oils, as well as petroleum-based lubricating oils) from several of the sources listed above; hexavalent chromium, nickel, and

zinc from the galvanizing line; and small quantities of chlorinated solvents and petroleum distillates from cleaning and maintenance operations throughout the facility. Trace amounts of other metals which can be minor constituents of steel may also be present in the waste stream. Chemical analyses of the influent was not available in the file materials reviewed. The current NPDES permit for this treatment works requires monitoring for suspended solids, oil and grease, lead, zinc, iron, pH, naphthalene and tetrachloroethylene. The plant has remained in general compliance with the NPDES effluent limits throughout its history. The Industrial Treatment Plant processes approximately 1,800 to 1,900 gallons of industrial wastes per minute. Sanitary wastes generated at the facility are routed through a separate sewer system to the Hennepin Public Treatment Works (Refs. 30, 38, 39, 40).

Release Controls:

PVC water stops were reportedly used at all construction joints in the reinforced concrete treatment tanks. Concrete access tunnels provide secondary containment along the sidewalls to the east of the River Water Clarifiers (SWMUs 22 and 23). Concrete tunnels were also present adjacent to the sidewalls on the east side of the Primary and Secondary Mixing Tanks (SWMUs 24 and 26), between the Primary Tanks and Secondary Mixing Tanks (SWMUs 24, 25 and 26), and along the entire west side of the Wastewater Treatment Area (SWMUs 24 through 29). These tunnels were located beneath the Inlet Flume and Distribution Flume (SWMUs 30 and 31). Shallow collection channels were present in the concrete floor of the tunnels adjacent to all treatment tank walls. The channels collect any seepage from the adjacent units and pump it to the head of the wastewater treatment system. No other secondary containment systems are present at the Industrial Treatment Plant (Ref. 40).

History of Releases:

The Industrial Treatment Plant has remained in general compliance with its NPDES effluent limits; minor excursions from these limits have periodically occurred. The only

documented release of an unregulated substance occurred on May 13, 1977 when waste pickle liquor overflowed from the Waste Pickle Liquor Tanks (SWMUs 40 and 41). The overflow was directed to the waste treatment plant and was inadequately treated prior to discharge to the Effluent Lagoon (SWMU 45) and eventually into the Illinois River (Refs. 14, 41). During the VSI, oily and rust-colored stains were observed on the concrete walkways surrounding the Primary Tanks and Secondary Mixing Tanks (SWMUs 24 through 26). In addition, dark, oily stains were observed in the access tunnels adjacent to these same units. It appeared that the released materials did not migrate beyond the walkways or access tunnels (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for releases to soil and groundwater from the wastewater treatment units (SWMUs 24 through 31). Based on the unsealed cracks observed in the concrete walls and base of River Water Clarifier No. 1 (SWMU 22), which is the same age as the other units, it does appear that cracks may be likely. The integrity of the unit could not be fully evaluated for these units because they were filled with liquid and were inaccessible at the time of the VSI.

Surface Water: The Industrial Treatment Plant ultimately discharges to the Illinois River via the Effluent Lagoon (SWMU 45) under NPDES permit. The potential for unregulated releases to surface water due to spills and overflow is low.

Air: The past and ongoing potential for releases to air is moderate based upon the potential for organic materials to be volatilized and normal evaporation from the uncovered units.

Subsurface Gas: The past and ongoing potential for subsurface gas generation is low to moderate based upon the potential for cracks in the concrete units and the organic constituents in influent waste stream.

Unit Number: 32

Unit Name: Waste Oil Tank (Photographs 2-2 and 2-3)

Unit Location: The unit is located immediately west of the Primary Settling Tanks (SWMU 25) at the Industrial Treatment Plant.

Unit Description: This non-RCRA-regulated unit consists of a 30,000 gallon, carbon steel tank on a raised concrete foundation. A pump room is located within the concrete foundation beneath the tank. The unit reportedly receives non-hazardous oily wastes that are separated from the wastewater stream in the Primary Settling Tanks (SWMU 25). From 1968 to 1983, the oil was used as a dust suppressant in the Steel Coil-Yard (SWMU 5) or sold to operating gravel quarries for dust suppression. The waste oil is now used for fuel blending (Refs. 40, 41, 42).

Period of Operation: This unit began operation in 1967 when the facility opened, is currently in use, and has no proposed closure date (Ref. 40).

Wastes Managed: Approximately 10,000 gallons of oily wastes are generated per week and are stored in this unit. The oil is removed on an as-needed basis. A majority of the oil consists of non-hazardous animal and vegetable oils with some hydrocarbon lubricating oils. Until 1983, the waste oil was used for dust control at the facility's Steel Coil Yard (SWMU 5), and sold to gravel quarries in the area for dust suppression purposes. From 1983 until July, 1989, the waste oil was shipped to LTV Steel's Indiana Harbor plant where it is blended in fuel at the blast furnace. The waste oil is now shipped to Breslube, Inc. (Refs. 40, 41, 42).

A recent analysis on the waste oil is included in Attachment A. Total concentration analyses of the waste indicates the presence of arsenic, chromium, lead, and organic halides.

The metals concentrations indicate that this waste could exhibit the characteristics of EP toxicity for arsenic (D004), chromium (D007), and lead (D008). The data is inconclusive because the extraction procedure was not performed prior to analysis. In addition, the analysis does not indicate whether or not the actual extraction procedure is required for this waste based on its physical state (Ref. 40).

Release Controls:

A pump room which has a metal door, concrete walls and concrete floor slab are located beneath the storage tank. No other release controls were observed or documented in the file materials reviewed (Ref. 40).

History of Releases:

There were no releases from this unit documented in the file materials reviewed. During the VSI, oily stains were observed on the exterior of the tank and the gravel and asphalt surfaces surrounding the pump room. Some of the stains were reported to be the result of overfilling of the tank and subsequent release through the vent hole (Ref. 40).

Conclusions:

Soil/Groundwater: There is a moderate to high potential for past and ongoing releases to soil and groundwater based upon the oily stains observed on and around the unit.

Surface Water: The past and ongoing potential for releases to surface water is low due to the localized nature of the staining and relative distance to surface waters.

Air: The past and ongoing potential for releases to air is moderate due to the volatile constituents in the waste oil, the vent opening on the tank, and the stains observed around the unit.

Subsurface Gas: The past and ongoing potential for subsurface gas generation is low to moderate based upon the stains observed and the relatively small quantity of released waste.

Unit Number: 33

Unit Name: Former Waste Oil Incinerator (Photograph 2-3)

Unit Location: The unit is located immediately north of the Waste Oil Tank (SWMU 32) at the Industrial Treatment Plant.

Unit Description: This non-RCRA regulated unit consisted of a Brule' Liquid Waste Incinerator, Model No. FL-P-50. The unit was formerly located on a concrete slab approximately 10 by 20 feet in plan dimensions; this slab is still in place at the site. The unit was used to burn waste oils that were stored in the Waste Oil Tank (SWMU 32). The unit was natural gas fired and was permitted by the Illinois Pollution Control Board to process a maximum of 600 pounds of oil per hour. The unit consisted mainly of steel and other metal components (Refs. 6, 40).

Period of Operation: This unit began operation in 1972 and was utilized until 1974. It was taken out of service due to operational problems caused by clogging of the burner system. The incinerator remained in place until 1982 when it was dismantled and sold for scrap (Refs. 6, 40).

Wastes Managed: The unit processed up to 600 pounds per hour of waste oils that were removed from the Primary Settling Tank (SWMU 25). The waste oil was temporarily stored in the Waste Oil Tank (SWMU 32) prior to incineration. The waste oil consisted primarily of animal and vegetable oils and lesser amounts of hydrocarbon lubricating oils. A recent analysis of the waste oils (presented in Attachment A) indicates that arsenic, chromium, lead, and organic halides were also present in the oil (Refs. 6, 40).

Release Controls: The unit was located on a concrete base slab. No other release controls were documented for this unit.

History of Releases: The unit was regulated to release gaseous emissions to the air during its operation. Two oily stains, approximately 4 feet in diameter, were observed approximately 10 to 15 feet northwest of the incinerator pad at the time of the VSI (Ref. 40).

Conclusions:

Soil/Groundwater: The past and ongoing potential for release to soil and groundwater is moderate based upon the soil stains observed around the unit.

Surface Water: The past and ongoing potential for releases to surface water is low due to the relative distance to surface waters and the fact that the unit is no longer in existence.

Air: The potential for past releases to air is high based on the hazardous constituents found in the waste oil and the air emissions released by the unit during operation. The unit was permitted by the Illinois Pollution Control Board. The ongoing potential is low because the incinerator has been removed from the site.

Subsurface Gas: The past and ongoing potential for subsurface gas generation is low to moderate based upon the oily soil stains observed around the former location of this unit.

